

FLIGHT

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AND AIRSHIPS

OFFICIAL ORGAN OF THE ROYAL AERO CLUB

No. 1298
Vol. XXV
No. 45

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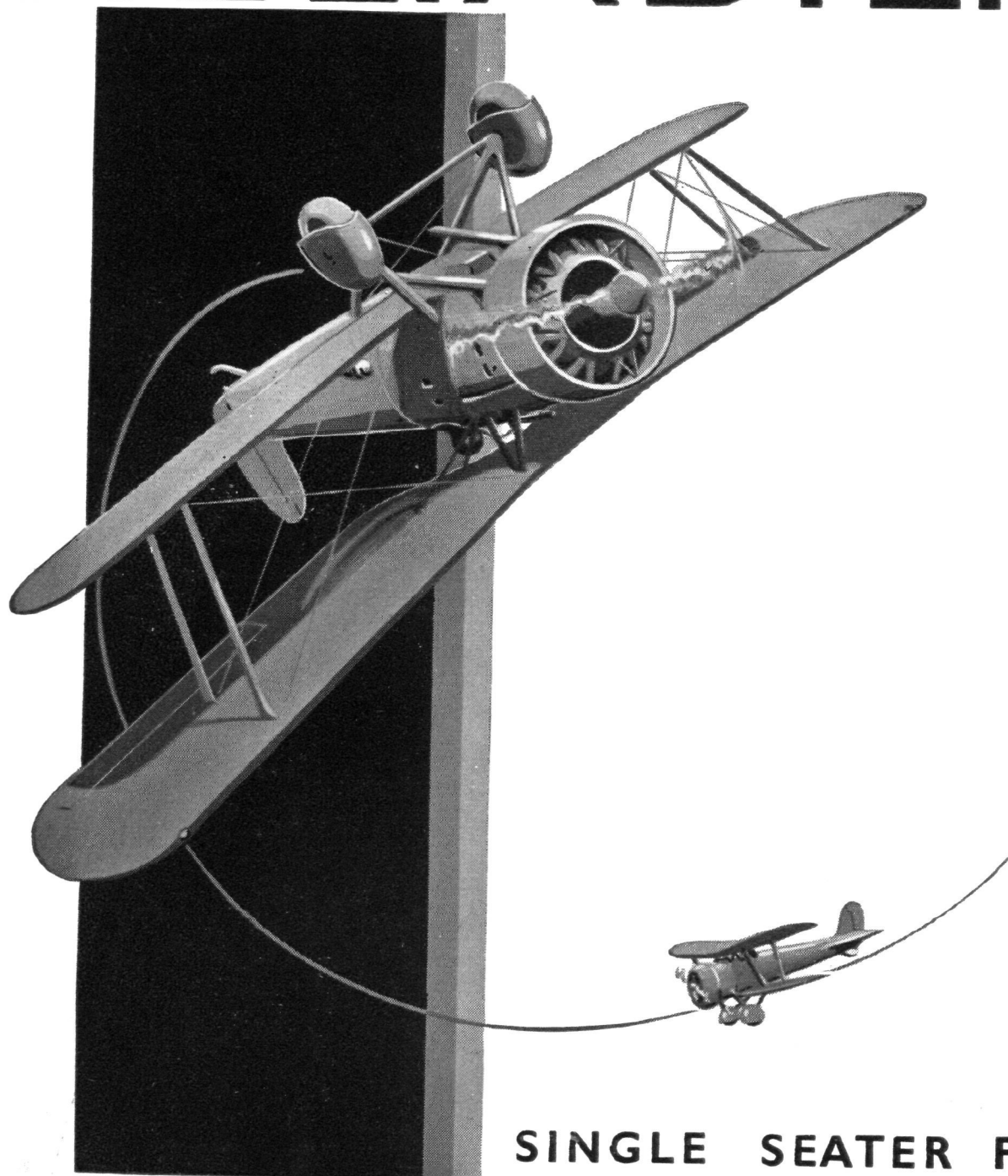


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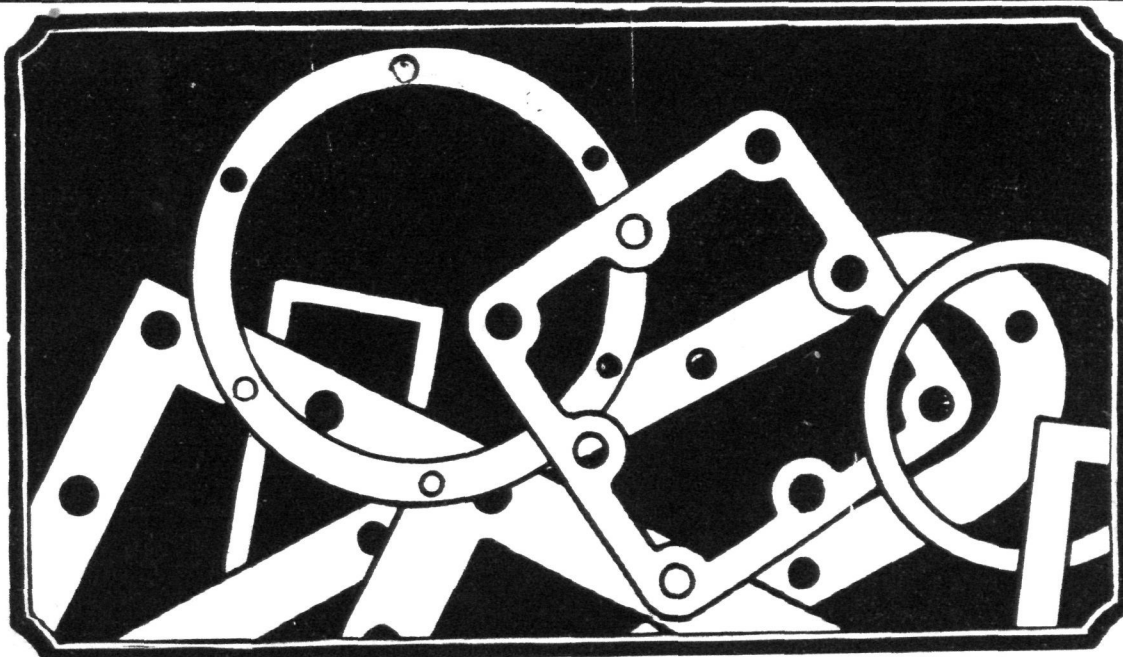
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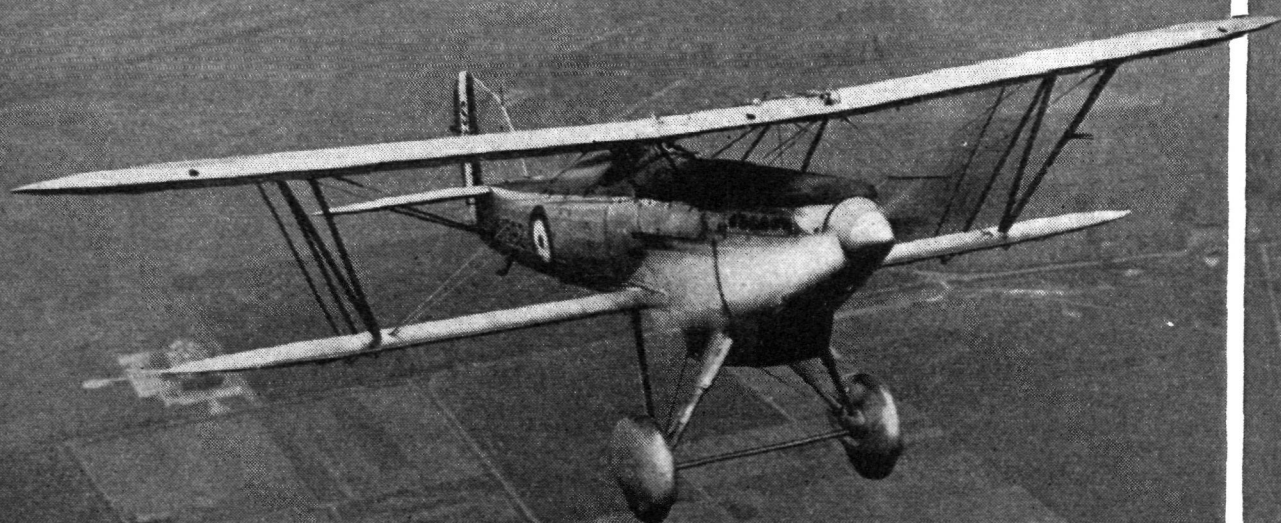
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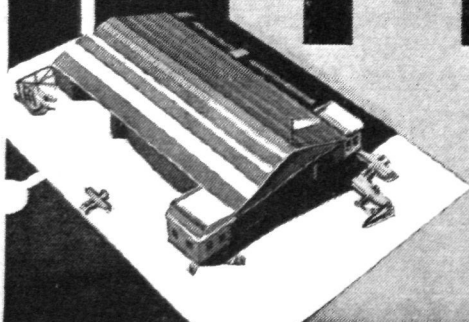
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FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

- 1933.
- Nov. 16. "Stiffness of Aeroplane Wings." Lecture by H. Roxbee Cox before R.Ae.S.
- Nov. 16. Lord Wakefield Boxing Competition, R.A.F., Henlow.
- Nov. 21. No. 605 County of Warwick Sqdn., A.A.F., Dance at Castle Bromwich Aerodrome.
- Nov. 22. College of Aeronautical Engineering Annual Dinner and Dance, Grosvenor House, Park Lane, W.
- Nov. 22. Irvin Parachute Flare Demonstration, Heston Airport.
- Nov. 23. Lincolnshire Ae.C. Annual Dance, "The Gaiety," Grimsby.
- Nov. 24. Central Flying School "Coming of Age" Dinner, at May Fair Hotel.
- Nov. 24. Yorkshire Ae.C. Annual Dance, Hotel Majestic, Harrogate.
- Nov. 25. Comrades of the R.A.F. Reunion Dinner, at Thames House Restaurant, Millbank, S.W.1.
- Nov. 25. Elec. and Wireless School Officers' Reunion Dinner, at R.A.F. Club, Piccadilly.
- Nov. 27. Cinque Ports Winter Dance, Leas Pavillion, Folkestone.
- Nov. 30. "Tail Buffeting." Lecture by Dr. W. J. Duncan before R.Ae.S.
- Dec. 1. No. 3 Sqdn. R.F.C. and R.A.F. Reunion Dinner, at May Fair Hotel.
- Dec. 1. No. 70 Sqdn., R.A.F., Reunion Dinner, at R.A.F. Club, Piccadilly.
- Dec. 1. Martlesham Annual Dinner.
- Dec. 1. Lancashire Ae.C. Annual Ball, Midland Hotel, Manchester.
- Dec. 1. Hampshire Ae.C. Annual Dinner and Dance, South Western Hotel, Southampton.
- Dec. 1. Leicestershire Ae.C. Dance, at Palais de Danse, Leicester.

EDITORIAL COMMENT



ANTAS, LTD., flies over the level plains of northern Queensland and the Northern Territory of Australia, where an aeroplane can be landed safely almost anywhere, and therefore the managing director of that company, Mr. Hudson Fysh, has always stuck to single-engined aeroplanes for his excellent service. The reason is quite adequate. One of the secrets of success in running any air line is always to use the type of machine which gives the best results on the route in question. There should always be a definite reason for using a particular type on a particular route. It is very rarely good policy to use a type just because it is the easiest sort of machine to acquire. The first cross-Channel services started with D.H. 4 machines, in which a 360-h.p. "Eagle" engine was used to carry one pilot and two passengers. The founders of that service afterwards admitted that the equipment was not ideal, but excused themselves by saying that those machines were the only ones available. That pioneer effort did not last more than a year, but mistakes were excusable at that time when there were no true civil aircraft in existence. Other air lines also have failed largely through using a type of machine which was not the most suitable for the particular route.

There are men who get prejudiced in favour of a particular class of machine, whether motor car or aeroplane or something else. If Mr. Hudson Fysh had been that sort of man, he might have been expected to show a bias in favour of the single-engined aeroplane. Fortunately, he is of different mould. He believes in choosing the right class of aeroplane for each route. We are now publishing his *Log of the Astraea* serially in FLIGHT, and we feel confident that it will be read with intense interest by all our readers. In the section which we published last week Mr. Fysh described the crossing of the Timor Sea from Darwin to Koepang. As he sat in his comfortable lounge chair in the saloon of the *Astraea* he did some useful thinking during the three hours forty minutes while the machine was flying over 520 miles of

sea. He noted that when the machine took off not a quail beset anyone. With the modern equipment and the experienced crew of the *Astraea* the sea crossing all appeared part of the day's work. Then, as mile after mile of sea passed below him, he reflected on what he calls the utter unsuitability of single-engined or twin-engined machines for a long sea crossing. This is very striking from a man who has used single-engined machines for the last 12 years or so, and has found them give excellent service. He went on to stress the absolute necessity for the careful selection of equipment, the provision of the latest modern aids to safe flying, such as reliable wireless, the selecting of pilots and ground staff with the very greatest care, very adequate workshop facilities, and, in fact, thorough organisation of the service on knowledge and sound principles. Any attempt to save on this service, any attempt to cheese-pare, he reflected, by using unsound or unsafe methods of operation, must end in disaster.

With 500 miles of sea passing by beneath the wheels, some such thoughts would probably occur to any air traveller who was not devoid of imagination. One could scarcely help reflecting on the unpleasant results of a forced landing, and would simply hug the knowledge that there was an ample reserve of engines and engine power as well as very good wireless equipment. The reflections are much more striking when they pass through the brain and find their way into the log of a successful managing director of a famous air line.

The equipment of the "Atalanta" type of aeroplane, with the four "Serval" engines, is such as to give great confidence in pretty well all conditions of flying. Later on, when the *Astraea* was crossing the mountain range from Siam to Rangoon (as recorded in this week's instalment of the log), where the clouds at a height of 10,000 feet covered the tops of all but the highest mountains and the *Astraea* had to plunge into the darkness and blindness of the cloud bank, Mr. Fysh noticed that two of the crew were asleep. Certainly no one felt any apprehension at crossing a tract of country which has appalled the gallant solo pilots who have taken their light aeroplanes over the England-Australia route. Again, when crossing the monsoon-sodden lowlands, where the country was too deep under water for any intermediate landing grounds to be used, Mr. Fysh jotted down that machines must positively keep in the air until they found their next aerodrome, hundreds of miles away. A machine which can be relied on not to let one down over such country ought certainly to be equally worthy of trust when crossing the sea. It is only logical to conclude that if one has definitely abolished the chance of forced landings, it does not matter what element or what condition of either element lies below one on the surface of the globe.

Nevertheless, we cannot entirely abandon the belief that it would be preferable to use flying boats all the way between Darwin and Calcutta. It may be illogical to cling to this belief, but in that case it is always illogical to use large seaplanes, unless it is quite impossible to find land aerodromes along the route. Unless there is no possible aerodrome in Crete, it is illogical for Imperial Airways to use "Scipio" flying boats for the crossing of the Medi-

terranean from Brindisi to Greece and Egypt. FLIGHT has always been an upholder of the seaplane, and in particular of the flying boat, and we believe that it is of vital importance to the British Empire that the flying boat should be developed to the utmost. Admittedly it is the business of the Government rather than of a commercial company, even one with Government support and Government directors, to care for the development of types which are of Imperial importance for the future but may not be the best dividend-payers in the present. None the less, there is a great deal of water to be crossed between Calcutta and Darwin, and a hull would certainly add something to that safety which is already so well considered by the design of the "Atalanta" type of landplane.

* * * *

When Sir MacPherson Robertson was asked why he offered £15,000 for an air race from Great Britain to Australia as his contribution towards the Victoria Centenary Celebrations, he gave several reasons, one

**Putting
Melbourne
on the Map**

of which was that interest in the race would make thousands of people study their atlases and learn what they did not know at present, namely, where Melbourne is. That such a remark should be justified is very deplorable, but it is a fact that the geography of the British Empire is very badly taught in most schools here, and possibly also in Dominion schools. Another reason given by Sir MacPherson was that the race would demonstrate how the isolation of Australia could be overcome by air transport. The air link, however, will most probably be an established fact before the race takes place.

Finally, Sir MacPherson said that the arrival of numbers of aeroplanes of the latest design would show Australians that as regards modern design they were behindhand, as there was no machine in Australia which could enter for the speed race with any chance of success. It is also very problematical whether a probable winner exists in Great Britain or in any other of the British Dominions. It does not follow that this is a disgraceful reflection on British designers. Hitherto there has been no demand which could call for such a design. The days are passing when aircraft firms hoped to create a demand for a new class of machine by providing the supply. It is also very doubtful whether Sir MacPherson's munificent offer will be sufficient inducement to produce a British machine which would have a chance of winning the race. It is not that the task is beyond the powers of our designers, but that the cost would be so great that even the winning of the prize would hardly recoup the firm for its outlay. Incidentally, the prizes are to be paid in Australian currency, which at current rates of exchange means a reduction of 25 per cent. when translated into English money. The first prize, if won by a British machine, will be not £10,000 but £7,500.

There is no need for Australians to bewail their backwardness in aircraft design. They have established some of the finest and most useful air lines in the world, and soon they are to join hands with Imperial Airways in definitely putting Melbourne on the map.





The Lord Mayor's Show

THE AIR WELL REPRESENTED : 1, the Lord Mayor's Coach. 2, Marconi's historical display. 3, the P.M.G. advertises the Air Mail. 4, Imperial Airways' air travel reminder. 5, No. 600 (City of London) Squadron, whose squadron leader, Stanley B. Collett, is a son of the new Lord Mayor. 6, a contingent of the R.A.F. 7, the R.A.F. Central Band. (FLIGHT Photos.)

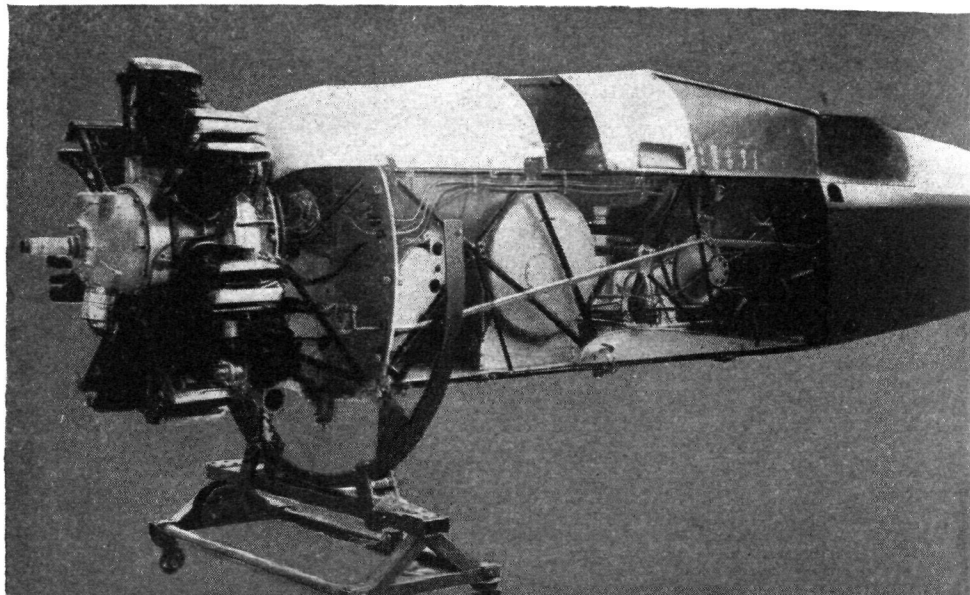
AVRO 637

An Economical Military Machine with Low Power but High Performance

INTENDED primarily for duties like frontier patrol and police work, the Avro 637, although a fully-armed military aeroplane, is an extremely economical one. For countries where high cost and running expenses cannot be entertained, but which require aeroplanes with a wide variation of equipment, the 637 is excellent. In many countries suppression of bandits, frontier warfare, and smuggling is the regular job of their Air Force, and for this the Avro 637 can be used more economically than high-powered, more expensive machines, and with equal efficiency.

Usually, economy means that the best equipment cannot be obtained; the production of the Avro 637 has, however, changed that aspect, and makes available aircraft suitable in every respect for the work they have to do.

The 637 is called an "Economy, Bombing and Fighting Aeroplane," and is the third of the series of all-metal machines built by A. V. Roe, Ltd., at Manchester during the last few years. The first of the type was the Avro 621 or "Tutor," a machine suitable for all forms of flying training. Next came the 626, a somewhat enlarged and three-seater version of the former, arranged for every form of military training. The 637 possesses all advantages of the form of construction perfected in these types, and has incorporated in it many features facilitating maintenance and repair. It is a two-seater biplane powered with the Armstrong Siddeley "Cheetah" engine developing 260 h.p., at 2,000 r.p.m., at 2,500 ft. Its construction follows the same general lines as the Avro "Tutor," which we have recently described. The fuselage is a single unit of welded steel tubes. The undercarriage, of the divided axle

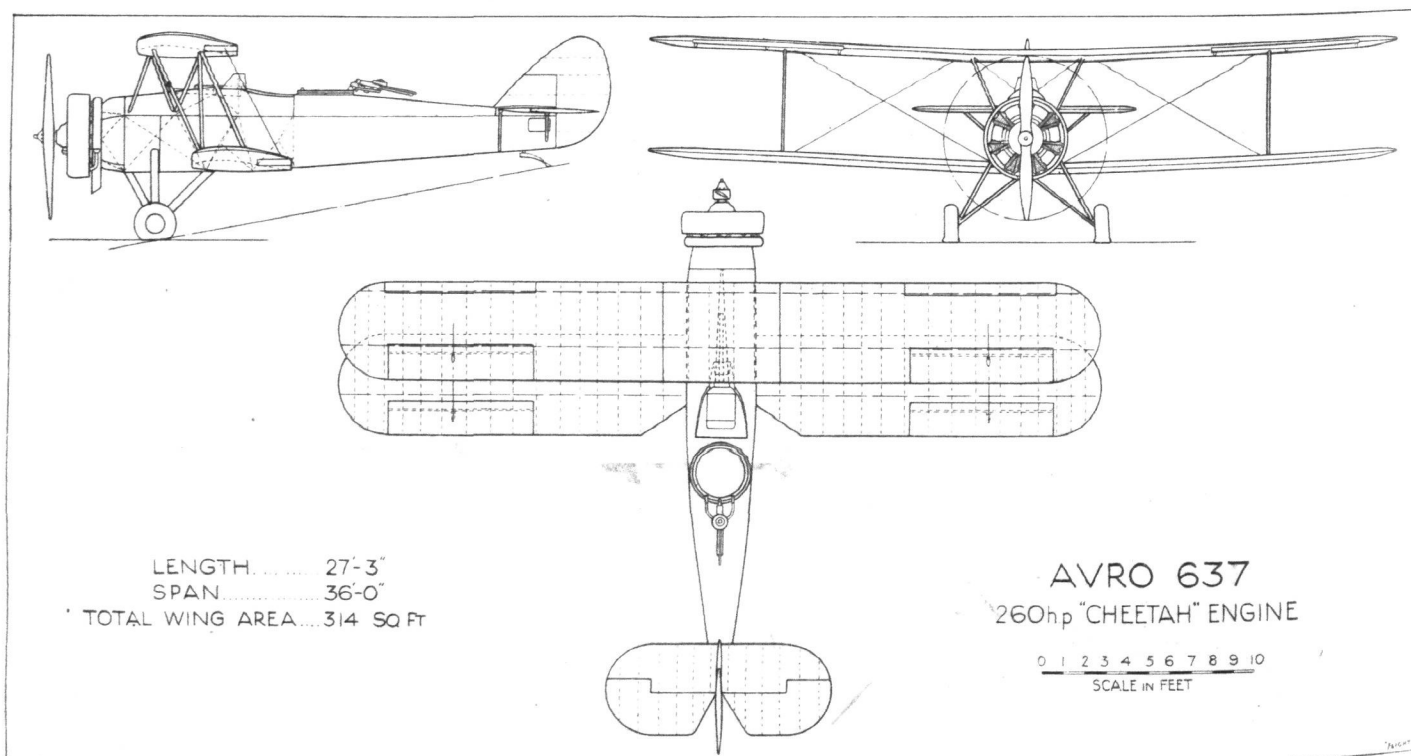


UNDER CONSTRUCTION: Rotatable trestles are used by A. V. Roe's for fuselage erection. It will be seen that the front end of this 637 fuselage is so held that it can be moved about or turned, thus making the job of erection very simple. (FLIGHT Photo.)

type, is mounted in two separate units, the shock absorbing member utilising steel springs in conjunction with oleo gear to absorb the rebound.

In common with the previous machines, large removable panels on the sides of the fuselage facilitate inspection and maintenance of the controls, while grease gun lubrication is used wherever possible. One Vickers gun is fitted centrally in front of the pilot, who uses the front cockpit. This gun fires through a channel in the top decking and top engine cowling. The rear cockpit has a Lewis gun on an Avro mounting. Fuel tankage of liberal capacity is provided, thus giving the machine a long range. The normal bomb load is eight 20-lb. bombs.

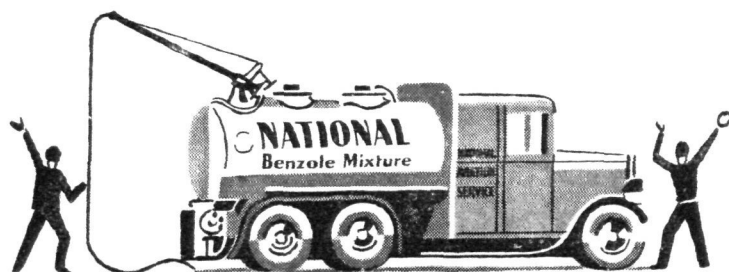
The detail work of the equipment follows the usual Avro lines in its completeness. The pilot's seat is readily adjustable for height, while the observer is provided with a folding seat, which can be put back out of the way when he is using the gun or acting as photographer. Both



THE AVRO 637: A general arrangement drawing, giving the main details of this latest Avro product.



ALL OVER ENGLAND—306 towns visited—194,000 people taken into the air—that is the 1933 record of the largest travelling air display in this country. Twenty aeroplanes flew a total of 700,000 miles—36 road vehicles travelled 430,000 miles transporting the display from town to town. Aeroplanes and vehicles together used 124,000 gallons of motor spirit. *And every gallon was supplied by the National Benzole Mixture* fuelling lorries accompanying the display. Great 22-seater plane, baby 'bus and heavy lorry alike used the Spirit famed for 'startability,' power and economy.

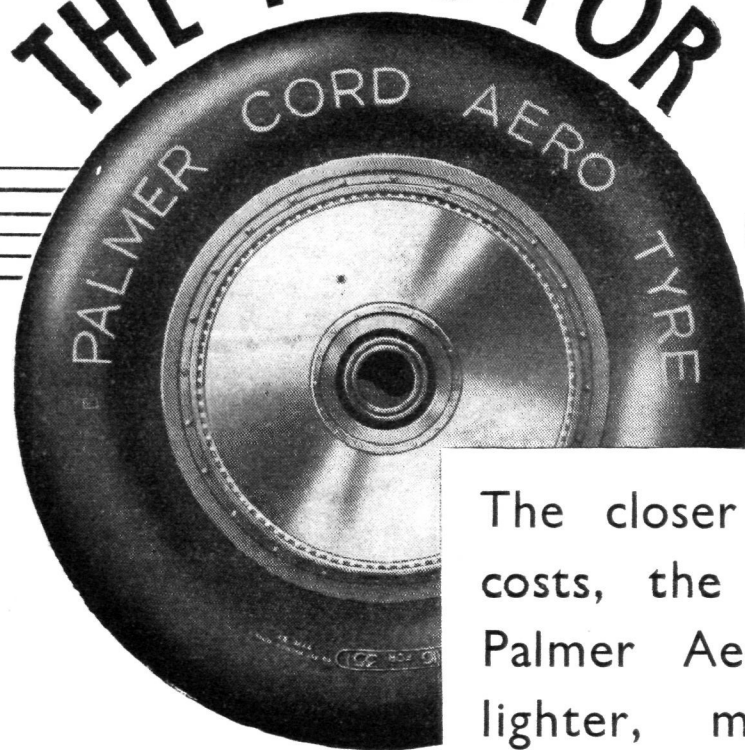


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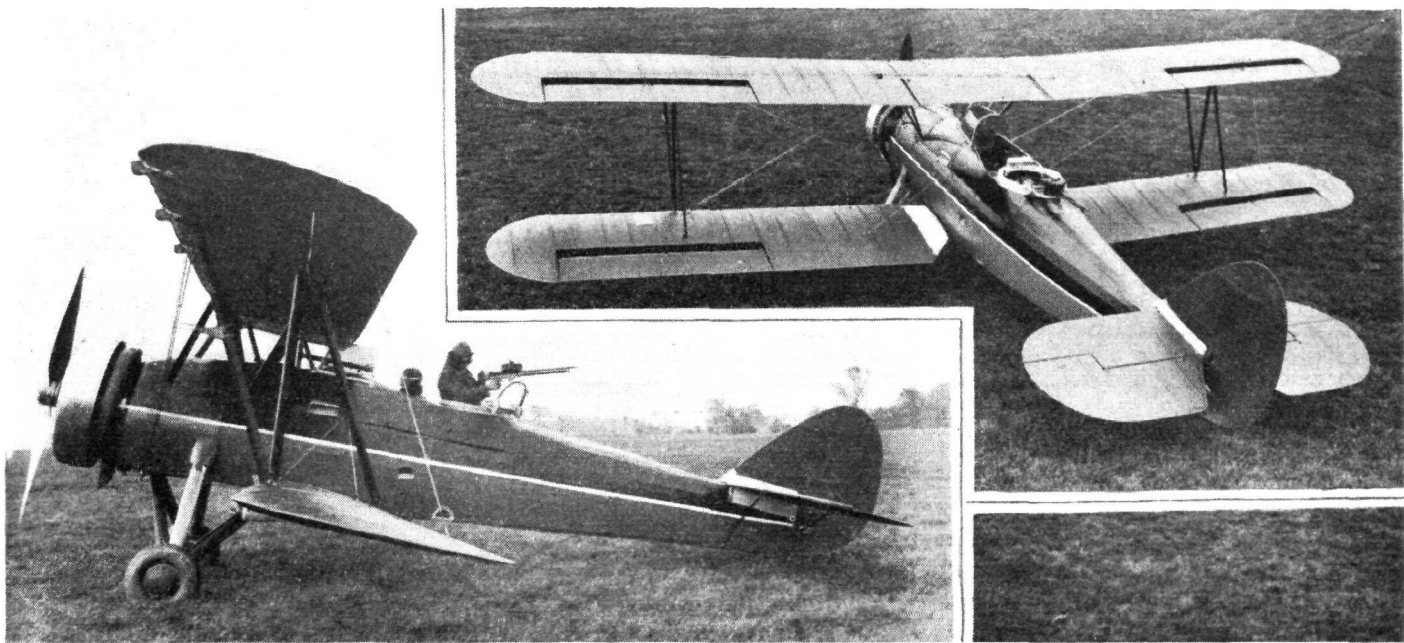
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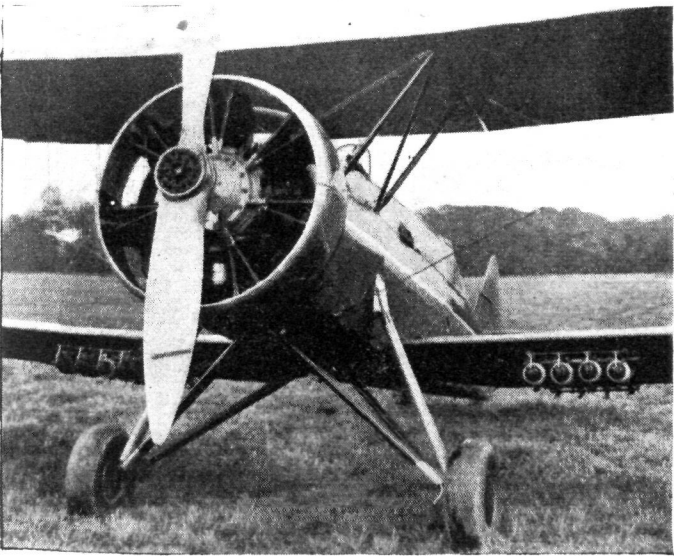
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AN ECONOMICAL PROPOSITION : The Avro 637 can be used for a variety of purposes, and is especially suitable for patrol and reconnaissance duties.

seats, of course, accommodate a standard parachute. The controls are quite normal, with an adjustable rudder bar and the Avro screw-type tail plane incidence adjustment. The wheel brakes are operated by a hand lever differentially applied by the use of the rudder bar. The main planes are of all-metal construction with steel spars and aluminium ribs.



FOR BOMBING : For punitive purposes the 637 can carry this load of light bombs. The Armstrong-Siddeley "Cheetah" engine, although giving 260 h.p., looks small and neat when cowled with a Townend Ring.

AVRO 637, ECONOMY BOMBING AND FIGHTING AEROPLANE (ARMSTRONG SIDDELEY "CHEETAH"—260 h.p.)

PERFORMANCE AT 3,150 LB. (1 428.8 KG.) WEIGHT		
	SPEED	
	With Bombs	Without Bombs
Maximum speed at—		
2,500 ft. (762 m.)	126 m.p.h. (202.8 km.p.h.)	135 m.p.h. (217.3 km.p.h.)
5,000 ft. (1 524 m.)	124 m.p.h. (198.6 km.p.h.)	133 m.p.h. (214.0 km.p.h.)
10,000 ft. (3 048 m.)	117 m.p.h. (188.3 km.p.h.)	127 m.p.h. (204.4 km.p.h.)
Landing speed ..	52 m.p.h. (83.7 km.p.h.)	50 m.p.h. (80.5 km.p.h.)
Cruising speed at 2,500 ft. (762 m.)	108 m.p.h. (173.8 km.p.h.)	115 m.p.h. (185.1 km.p.h.)
Duration at cruising speed ..	2.9 hr.	4.75 hr.

	CLIMB	
	With Bombs	Without Bombs
Rate of climb at sea level ..	850 ft. min. (4.3 m./sec.)	990 ft. min. (5.0 m./sec.)
Time to—		
5,000 ft. (1 524 m.)	7.2 min.	5.9 min.
10,000 ft. (3 048 m.)	18.5 min.	14.6 min.
Service ceiling ..	14,000 ft. (4 267 m.)	16,000 ft. (4 877 m.)

DIMENSIONS		
Span of main planes ..	..	36 ft. 0 in. (10.97 m.)
Height overall ..	..	9 ft. 9 in. (2.96 m.)
Length overall ..	..	27 ft. 3 in. (8.31 m.)

AREAS		
Main planes with ailerons ..	..	314.0 sq. ft. (29.17 sq. m.)
Ailerons, total ..	..	49.3 sq. ft. (4.58 sq. m.)
Tail planes with elevators ..	..	39.1 sq. ft. (3.63 sq. m.)
Rudder ..	..	12.0 sq. ft. (1.11 sq. m.)
Fin ..	..	3.3 sq. ft. (0.31 sq. m.)
Wing loading ..	..	10.0 lb. sq. ft. (48.82 kg./sq. m.)
Engine loading ..	..	12.1 lb./H.P. (5.4 kg. H.P.)

WEIGHTS		
WITH BOMBS		
Tare weight of aircraft ..	..	1,987 lb. (901.3 kg.)
Pilot and observer ..	340 lb. (154.2 kg.)	
Parachutes ..	40 lb. (18.1 kg.)	
Fuel (40 gallons) ..	308 lb. (139.7 kg.)	
Oil (3½ gallons) ..	34 lb. (15.4 kg.)	
		722 lb. (327.5 kg.)
Lewis gun with mounting and sights ..	63 lb. (28.6 kg.)	
4 drums S.A.A. ..	40 lb. (18.1 kg.)	
Vickers gun with mounting and sights ..	53 lb. (24.0 kg.)	
600 rounds S.A.A. with belt and box ..	49 lb. (22.2 kg.)	
8 20-lb. bombs, carriers, release gear and sights ..	235 lb. (106.6 kg.)	
		440 lb. (199.6 kg.)
Total weight ..	..	3,149 lb. (1 428.4 kg.)

WITHOUT BOMBS		
Tare weight of aircraft ..	..	1,987 lb. (901.3 kg.)
Pilot and observer ..	340 lb. (154.2 kg.)	
Parachutes ..	40 lb. (18.1 kg.)	
Fuel (65 gallons) ..	501 lb. (227.2 kg.)	
Oil (5½ gallons) ..	54 lb. (24.5 kg.)	
		935 lb. (424.1 kg.)
Lewis gun with mounting and sights ..	63 lb. (28.6 kg.)	
4 drums S.A.A. ..	40 lb. (18.1 kg.)	
Vickers gun with mounting and sights ..	53 lb. (24.0 kg.)	
600 rounds S.A.A. with belt and box ..	49 lb. (22.2 kg.)	
		205 lb. (90.9 kg.)
Total weight ..	..	3,127 lb. (1 418.4 kg.)

From the Clubs.

BROOKLANDS

A welcome improvement in the weather has resulted in the School being kept going at top speed, the hours for the week totalling 106. Messrs. Pitt and Marthral did successful first solos, and Miss Farmiloe completed a very creditable "A" licence. Mrs. John Chapman has returned to renew her "A" licence after not having flown for a year. She renewed her licence in two flying days. During the week four very successful parachute jumps were carried out on G.Q. parachutes. On Thursday, November 9, Capt. Findlay and Mr. Gogte left Heston rather late on two machines. Fog forced Mr. Gogte to land near Cobham, the machine being flown back next day. On Tuesday, November 7, Mr. Lowdell delivered a "Tiger Moth" to Amsterdam, the journey not being too easy by reason of bad weather on the Continent. Cross-country flights were carried out to Northampton, Cowes, Portsmouth, Lympne, Gravesend, and Farnborough. The Hawker "Tomtit" has returned to the School for further flying tests. Sales are being kept busy, a "Fox Moth" having just been sold to India. The Aero Club dance was a great success and very well attended. Members are reminded that orders for Christmas cards should be placed as soon as possible with the Secretary of the Brooklands School of Flying.

HANWORTH (N.F.S.)

Two new members have been enrolled during the week, and two potential members took flying lessons. Mr. Weston, the *Daily Express* Scholarship pupil, has just taken his "A" licence, and Mr. King, of the Insurance Flying Club, carried out tests for his "A" licence on Saturday, November 4. A successful dinner and dance was held on Friday, November 10, and among those present were the Hon. Mrs. Forbes Sempill and the Dowager Lady Swaythling, also visitors from America, Sweden, South Africa, and Germany. These dinners, which are held periodically and followed by a dance, are always well attended. People who have been know why that is so, and people who go for the first time will discover that not only will they have an unusually excellent dinner, but also that the following part of their evening's entertainment fulfills its purpose with equal excellence. Friday was no exception, and no one could say that they did not enjoy themselves. The workshops are still very busy, five machines belonging to the Hon. Mrs. Victor Bruce being in for overhauls.

CINQUE PORTS FLYING CLUB

Flying times are keeping steady, and during the last week 28 hr. 45 min. were flown. Mr. Trevor, who failed to complete his "A" licence while on the Small

Arms Course during September, returned to Lympne and successfully completed his tests. New pupils for the present course are Messrs. Vernon Seymore-Evans and Lea, while Mr. Biard and his daughter from Bexhill-on-Sea each had a trial lesson; Miss Biard, incidentally, is only 15 years of age. There are altogether 11 pupils under instruction, which is good for this time of year. The Club winter dance has been fixed for Monday, November 27, at the Leas Pavilion, and members are requested to take note of this, as, not being the annual Club dinner and dance, it will not be widely advertised.

READING AERO CLUB

At the Special General Meeting, held on Sunday, November 5, Mr. C. A. Nepean Bishop was elected Hon. Secretary, in place of Mr. W. A. Smallcombe, who finds the calls on his time so great that he has been compelled to resign after putting in much good work. Mr. G. F. Raynor was elected Hon. Treasurer in Mr. Bishop's place. The Phillips and Powis School of Flying has been keeping its times well up for this time of year. There are now 13 new pupils under instruction, including Mr. Ruddle and Herr. Lehmann, who are both training for a "B" licence. Mr. Singh-Uberoi has also joined the School. Cross-country flights have been done to Upavon, Portsmouth, Southampton, Hanworth, Shoreham, and Brooklands. The shops are very busy, the machines therein including Maj. Allen's "Puss Moth" for C. of A., and Mr. Sanders' "Martlet" for overhaul.

LONDON AEROPLANE CLUB

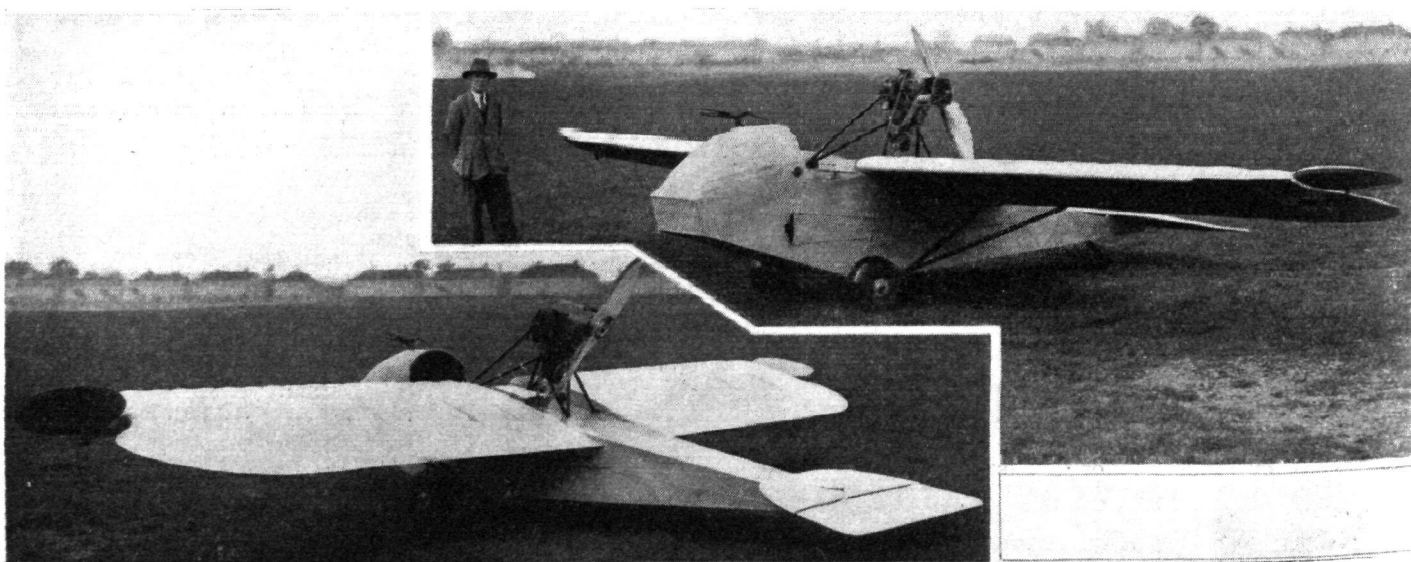
Flying times for the week amounted to 55 hr. 35 min., first solo flights being done by Dr. Angela Ritchie, Messrs. A. Batten, Ellis, and Behenna. Among new members the Club has pleasure in welcoming Messrs. E. M. Wright, J. A. and J. Sayers, the two latter from the Kuala Lumpur Flying Club, who are over in England for six months. The four "Gipsy Moths" which the Club brought over from Stag Lane have been sold, two of them having been brought by two members, Messrs. C. and W. Goldsmith. A "Tiger Moth" has been in use and a "Puss Moth" will be added soon. The Club would like to remind members of the courses in Navigation, Engines, and Rigging, which are held every Saturday from 4 p.m. to 5 p.m.

LIVERPOOL AND DISTRICT AERO CLUB

Flying times for the week ending Friday, November 10, amounted to 19 hr. 40 min. dual and 15 hr. 30 min. solo. The weather on the whole has been bad, there having been low clouds and bad visibility.

BRISTOL AND WESSEX AEROPLANE CLUB

Mr. W. L. Stranger made his first solo flight during



"ROTARY AILERONS": This machine, the Pickering-Pearson, is intended to obtain its directional as well as lateral control by the Pearson ailerons. These, it may be remembered, were also fitted on the Glenny & Henderson "Gadfly" some years ago. We obtained these photographs some time ago but, in accordance with the request of the makers of the machine, refrained from publishing them. As photographs have been published elsewhere in the meantime, we feel at liberty to show our readers what the machine looks like. We might point out that at least a fin is to be added, if not an orthodox rudder. (FLIGHT Photos.)

the week. On Thursday, November 9, the Bristol and Wessex Aeroplane Club played their annual squash rackets match against the Clifton Club, which resulted in a win for the Flying Club by 5 ties to none. The annual ball will be held at the Grand Spa Hotel, Clifton, on Friday, February 16, 1934.

NORTHAMPTONSHIRE AERO CLUB

Flying times for the week totalled 10 hours. On Friday last, November 10, the Club dance was held at the George Hotel, Kettering, and was a great success. About 100 guests sat down to dinner, and about 150 more turned up for the dance. On Saturday, November 4, a firework party was held in the evening. Mr. J. Linnell provided most of the fireworks and put up a very excellent show.

HERTS AND ESSEX AEROPLANE CLUB

It is with the very deepest regret we learn of the death of Mrs. G. W. Frogley, which occurred on November 5 at Cherry Tree Farm, Hoddesdon. The funeral service took place on the afternoon of November 9 at Hoddesdon Cemetery. Mr. G. W. Frogley was to have occupied the chair at the Club's annual dinner on November 16, but in view of his bereavement it has been decided to postpone the dinner until February 22, 1934.

The Herts and Essex Aeroplane Club at Broxbourne reckon to give extensive tuition in ground instruction. Map reading, cross-country flying by compass, and general navigation courses are available to all members, and lectures on these subjects help members to occupy the winter evenings. The October Monthly Competition was won by Mr. G. P. Moss, Mr. G. H. L. Curtis being second. The competition for the "Woodside" Challenge Cup, kindly presented by Mr. W. Sanders, has been postponed to Sunday, November 26. The flying times for the month of October amounted to 250 hr., which would have been more but for unfavourable weather.

AVIATION AT FORD

The South Downs Aero Club continues to prosper at Ford Aerodrome, several new members having joined recently, and a gratifying amount of instructional work given despite the start of the winter season. The Rollason Aviation Co., Ltd., which controls this Club, has recently been reconstructed. Mr. W. F. Rickard is now Managing Director and Mr. S. C. Challon has taken the place of Mr. Boyd as Secretary, though the latter will retain his directorship. Both Capt. W. A. Rollason and Capt. A. F. Muir have retired from the Board. Flt. Lt. G. A. Tyson has taken the place of Mr. T. W. Nash as instructor.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

Yorkshire Club machines flew about 16 hours during the week. A new flying member is Miss Hare, of Scarcroft, and Mr. L. H. Heath obtained his "A" licence. Visiting machines included an "Avian," piloted by Mr. G. Shaw, and an Avro piloted by Mr. K. Twemlow, of Henlys. On Saturday, November 4, Santa Claus landed at Yeadon, was welcomed by a large crowd of children, and proceeded by car to a large local store.

NORFOLK AND NORWICH AERO CLUB

During the last week instruction was given by Mr. Collier to Messrs. G. R. F. Clarke and P. M. Britton, and solo flights were done by Messrs. W. O'Brien, A. R. Kirkby, P. M. Britton, J. B. Purefoy, S. Hansel, A. J. S. Morris, H. A. Pank, and H. C. Stringer. The majority of instruction given last week by Mr. Collier was given to scholarship applications, which kept him busy most of the week-end. A few weeks ago the business houses of Norwich were approached by the Club with a view to their giving scholarships for their employees. Mr. H. N. Holmes, then the Lord Mayor, approved of the scheme, and supported it by giving a scholarship for the employees of Messrs. Edwards and Holmes. Messrs. Boulton and Paul immediately gave two for their staff, one of which was given by Mr. J. Carter, the general manager, and Mr. Alan Colman gave one for Messrs. J. J. Colman. The short days of the winter have prevented the Club from attempting to deal with any further scholarships, as the entries already received will give the Club sufficient work during the week-ends for a month or two, but it is hoped later that other firms will follow the example set by the firms above mentioned. For the benefit of members who are sending Christmas cards abroad, the Club are preparing a number of cards with the Club crest dye-stamped in gold and a mounted aerial photograph inside either of Norwich Cathedral or of the Broads. The next dance in the club house is being held on Friday, December 1, at

8.30 p.m. Tickets are 3s. 6d. each, and are obtainable from the Club Secretary.

CARDIFF AEROPLANE CLUB

The flying times for the Club for the week ending November 12 amounted to 2 hr. 10 min. solo, 12 hr. 5 min. dual and 55 min. tests.

THE SOUTHEND FLYING CLUB

Reports of adverse weather conditions outside the local area restricted flying to the vicinity of the aerodrome over the week-end. One cross-country attempt on Saturday, November 11, could get no further than the Kent side of the Estuary. Circuits and landings were the order of the day, and Capt. Love calculates that he did 52 landings with pupils. On Sunday the conditions improved, and Mr. Lipton arrived in his "Gipsy Moth" from Hatfield, also Mr. Pain flew over from Blue Barns in a "Redwing." There is much satisfaction at the return of the Cirrus "Moth" after its overhaul, and the "Blue Bird" is now fitted with a new Genet "Major." Last Saturday, November 11, saw the best attendance for a long while for the Saturday evening informal dance.

FROM CAIRO

Mr. G. D. B. Williams, Chief Instructor of the Johannesburg Flying Club, whose departure from Heston was mentioned in FLIGHT of November 2, has called at Almaza Aerodrome, Cairo, on his way to Johannesburg with the new "Dragon" which will be used in connection with the steel firm of Stewarts and Lloyds. Three Messerschmidt aeroplanes with Siemens S.H.13 engines, piloted by Roumanian Air Force officers, passed through Almaza on a cruise to the Cape. The first film to be "shot" on Almaza Aerodrome, Cairo, has appropriately starred Mlle. Lutfia El Nadi, Misr-Airwork's successful lady pupil, in an aerobatic display. It will be remembered that Mlle. Lutfia is Egypt's first lady pilot. The film is being released shortly, and will be shown at the Fouad Cinema in Cairo. Pupils of the Misr-Airwork flying school have formed a committee to meet once a week and discuss progress and put forward suggestions.

AIR SERVICE TRAINING

The next course for the March examination for the Second Class Air Navigator's Licence and the Long Wireless Course are due to start on Tuesday, November 14. A number of new pupils arrived at the beginning of October and several existing pupils have rearranged their programmes; for instance, Mr. Coull, who has been taking an engineering course, has decided to transfer to the long course. He will, therefore, be flying all the School types and will be training for his Commercial Pilot's Licence, his Navigator's Licence, his Wireless Licence and his Blind Flying Certificate. Another pupil, Mr. Mafatia has also decided to extend his training in a similar way. Messrs. Whitehead, Kennedy and Ghatge have passed the technical examination for "B" pilots' licences, and Messrs. Greenhalgh and Douglas arrived to study for the same. Earlier in the month Countess Frijs of Denmark qualified for her "A" licence. On October 3 the miniature rifle range was officially opened, and under the enthusiastic guidance of the armament instructor, Mr. Ford, proved an immediate success. On October 26 the Club competed with a team representing the Eastleigh Fortress and won. The School hockey, Association football and squash racquets teams played a number of successful matches.

AVIATION IN COVENTRY

A group of young "A" licence pilots and others who are desirous of becoming pilots have decided to form a Coventry Civil Aviation Group. It is the object of the promoters to confine membership to those who want to train for "A" licences. Sir W. G. Armstrong-Whitworth Aircraft, Ltd., have permitted the Group to use Whitley Aerodrome on very generous terms, and arrangements have been made with Maj. J. E. Bonniksen, of the Aircraft Park, Leamington Spa, to give his services as an instructor. Maj. Bonniksen holds a "B" licence for five machines. Instruction will be given on a "Gipsy Moth" dual machine, and the maintenance will be done by the Armstrong-Whitworth Company. Entrance fee to the Group, and also the annual subscription will be 1 guinea. The charges for flying will be £2 an hour for dual and 35s. an hour for solo. Members will be expected to put in at least 15 min. flying every fortnight for the first six months of their membership; this is, of course, only a minimum. Particulars of membership can be obtained from the Secretary, Mr. H. T. Jackson, 61, Huntingdon Road, Earlsdon, Coventry.

Airport News.

CROYDON

ARMISTICE day was quietly celebrated at the Airport of London as usual. Maroons such as are used to indicate the position of the aerodrome to machines coming in to land over or through fog marked the beginning and end of the two minutes' silence.

An Imperial Airways machine, inward bound to Croydon, was over the British War Graves in France at eleven o'clock on November 11. It was "Hengist," with Capt. O. P. Jones in command. Just before the hour, when at 6,000 ft., the engines were throttled back and the wireless was tuned in to the London National wave length. A passenger told me of the strange, almost uncanny sensation in the cabin when Big Ben rang out clear above the muffled note of the throttled-down engines. The passengers stood erect, hatless and motionless for the two minutes as the big machine slowly lost 2,000 ft. of height in its glide above the last resting place of so many British dead. Then came that bugle call which has meant so much in past times to so many of us—the Last Post. Then the passengers sat down and quietly continued their journey. I wonder if anywhere there was a stranger and a more impressive two minutes' silence than in the cabin of the "Hengist."

International relationships at this cosmopolitan Airport of London are of the most amicable always. British, French, German, Belgian, and Dutch pilots regard each other simply as brother pilots, and you will see many a mixed group of various nationalities discussing common interests of the air. I should like to show some of the hothead politicians of one or two nations round the Airport of London.

Here is another Armistice day incident which I found impressive. I saw a German pilot of the D.L.H. in uniform go up to a girl and buy a "Flanders poppy." He was a man of an age to have fought in the war against us. He turned away and stood for a second with the flower in his hand, gazing at it. Then he placed it in his buttonhole and walked away. I saw the expression on that old war pilot's face as he regarded the poppy. It meant to him exactly what it means to us.

And now for the week's news items. Two important travellers—I doubt if they knew each other—who travelled by K.L.M. from Croydon on November 8 in the same machine were Sir Basil Blackett *en route* for Singapore by the Royal Dutch line, and Sir Henry Deterding, of the other Royal Dutch, the company which supplies the fuel for the K.L.M. aeroplanes. Sir Basil Blackett is on a Government mission to investigate certain currency problems in Malaya.

The morning after news had reached London of the assassination of the Afghan monarch, the Afghan Minister in London left by the earliest Imperial Airways aeroplane for Paris to confer with his colleague there. I often wonder

what high officials would do if air travel suddenly ceased, for in these days they rely on it absolutely when an emergency occurs.

Mr. Whitney-Straight, well-known American racing motorist and Cambridge undergraduate, arrived by Imperial on November 10. He was met by Mr. A. G. Marshall, who had flown a "Puss Moth" in to meet him, and a few minutes after the air liner had landed the pair took off for Cambridge, which is the right way to do your travelling when you come to think of it.

The Maharajah of Dharampur and suite, including an aristocratic-looking small boy of five or six years of age, left Croydon for Paris by Imperial Airways on November 9. The same day a French privately-owned Caudron named *Phalène* (one Hispano "Suiza" radial engine) left for Paris with three passengers, having made the opposite journey the previous day.

On November 8, Capt. Broad delivered the first D.H. "Dragon" to Imperial Airways for the Iraq pipe-line patrol. After tests this machine left for Paris and Marseilles on the way to Iraq on November 10 with Mr. Youell as pilot. The second of the "Dragons" arrived on November 10, and was handed over by Capt. Broad, who returned whence he came in the D.H. experimental bus marked E.8, instead of with registration letters.

A visitor to the Airport who displayed keen interest of a professional shrewdness in all he saw was Mr. Sword, director of that well-known unsubsidised air company, Midland and Scottish Air Ferries, Ltd.

During the week Imperial Airways, Ltd., were testing out a 27-ft. canvas, wood-framed passengers' gangway designed to protect travellers from the high winds inseparable from running aero engines, and from Croydon winter weather as well. Unlike the usual ship's gangway, this one is roofed and has roof lights. It is on wheels and has been irreverently nick-named "The Covered Waggon." It seems to me to be a piece of well-thought-out and practical workmanship, and it was designed and built by the company. Something of the sort is badly needed.

During the last week of fog and bad visibility some hard things have been said in various languages at Croydon about the 100-ft. radio beacon mast which is not very far to the side of the direct line of landing and take-off laid down as compulsory for fog (or calm weather) use. The thing has not yet really started to earn its keep as a radio beacon, and there seems to be no good reason why it should ever have been placed where it is, and where, in fog, it undoubtedly forms a dangerous obstruction. I believe no pilot and no manager of any air traffic company using the airport was consulted in advance about the best position in which to place it. It is the unanimous opinion here that it should be moved at once.

A. VIATOR.

FROM HESTON

IN general fog conditions visibility at Heston is often several hundred yards where visibility elsewhere is 0. Heston looks as low as Holland, but is about on a level with the top of St. Paul's. Mrs. Cleaver, flying a "Puss Moth" ("Gipsy III") back from Paris last Friday, found London veiled in mist, and returned to Biggin Hill, where she landed. On Sunday, Monday and Tuesday, Biggin Hill remained perfectly invisible. On Wednesday Mrs. Cleaver returned with the "Puss Moth" to Heston, where flying had been going on all the week!



Airport Conference

HIS ROYAL HIGHNESS THE PRINCE OF WALES has consented to open an Airports Conference, which is to take place at the Mansion House, London, from the afternoon of Friday, December 8. The conference has been convened by the London Chamber of Commerce in conjunction with the Royal Aeronautical Society, and will discuss the question of the laying out of more municipal aerodromes

Mr. Pat Randolph left Heston on Wednesday in his new "Gull" with his Commanding Officer, Capt. Goschen, to join their regiment, the Grenadier Guards, stationed at Cairo.

The British Air Navigation Co. rushed the pictures of Gordon Richards achieving his record to London for the papers on Wednesday, November 8.

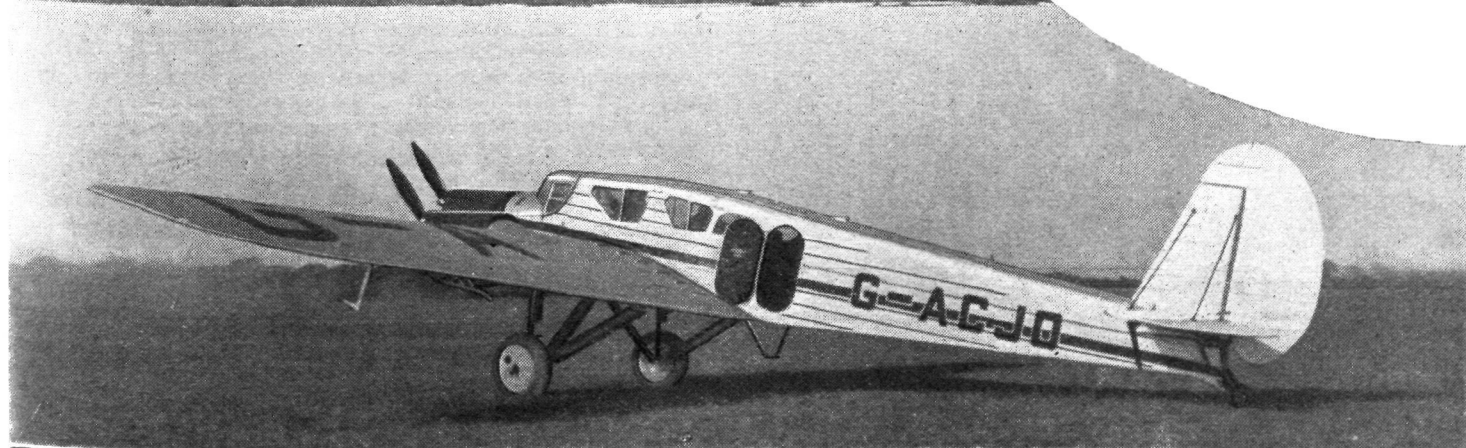
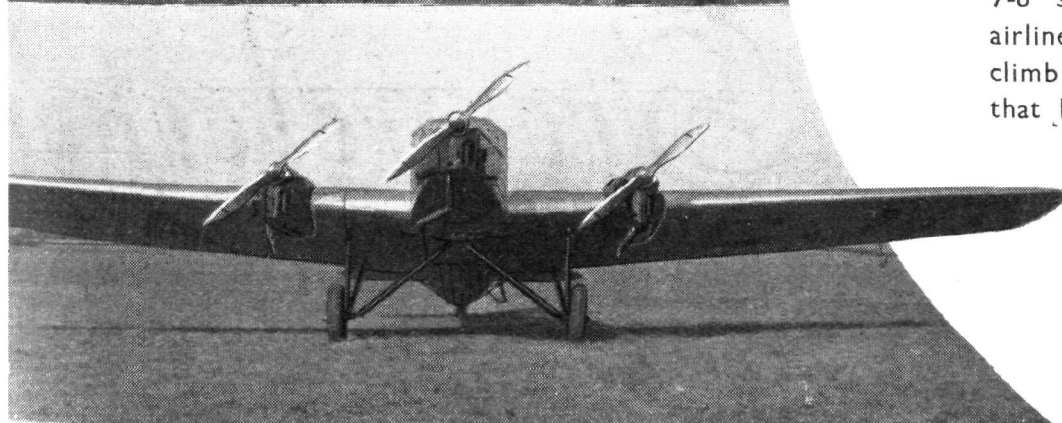
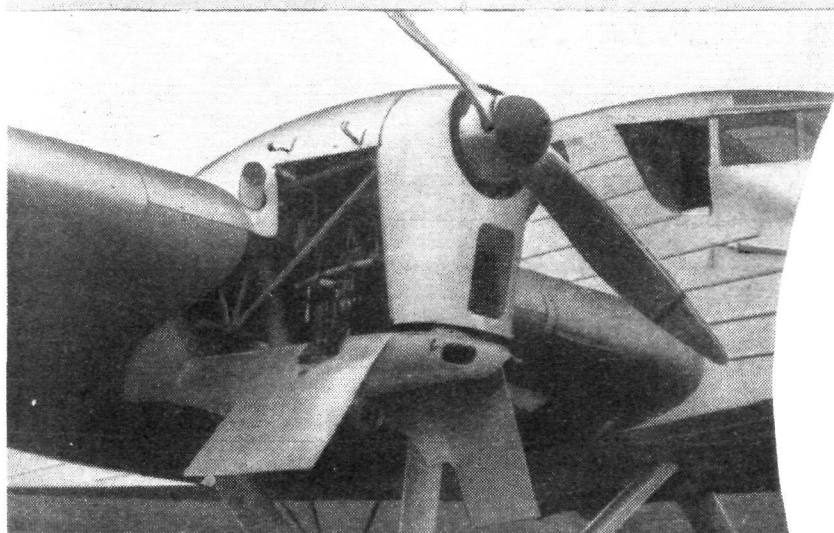
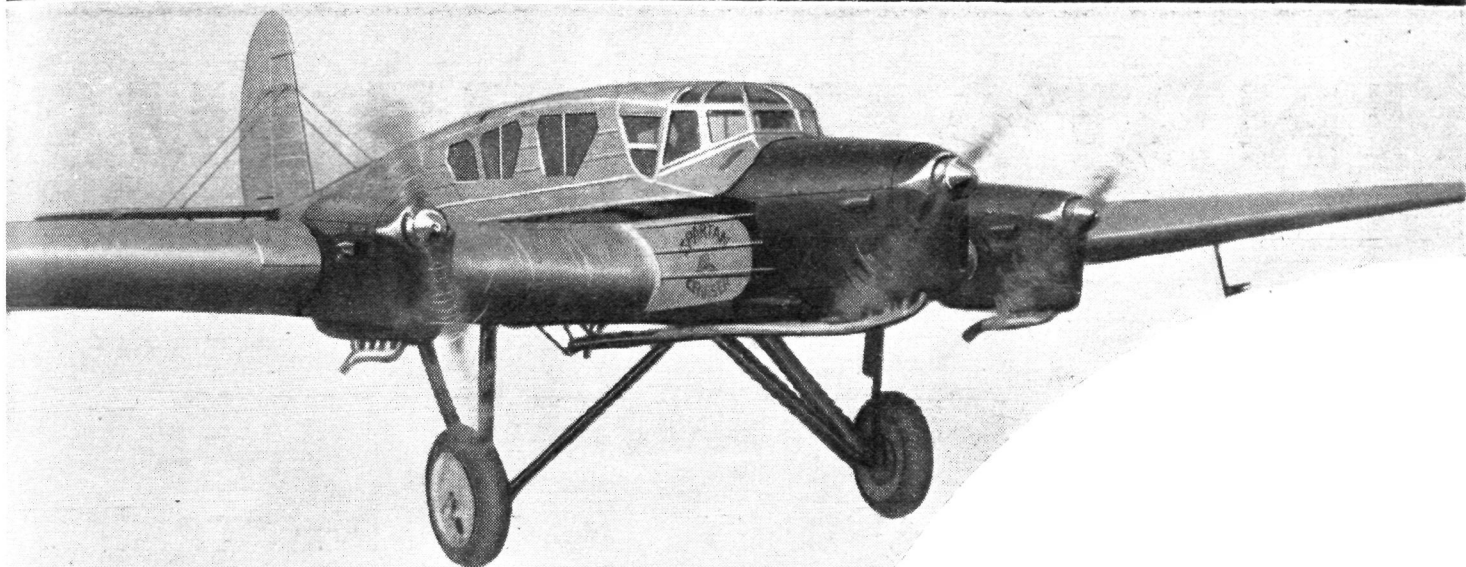
In the first seven days of November more flying was carried out than in the whole of November last year. Lady Allendale is a new pupil on the register.



and landing grounds, etc. The Lord Mayor will preside.

Turnberry Landing Ground

TURNBERRY Landing Ground, particulars of which have been included in the A.A. Register of Landing Grounds, has now been partially ploughed up and the area which remains is not considered large enough for use by aeroplanes. The schedule should therefore be withdrawn from the Register.



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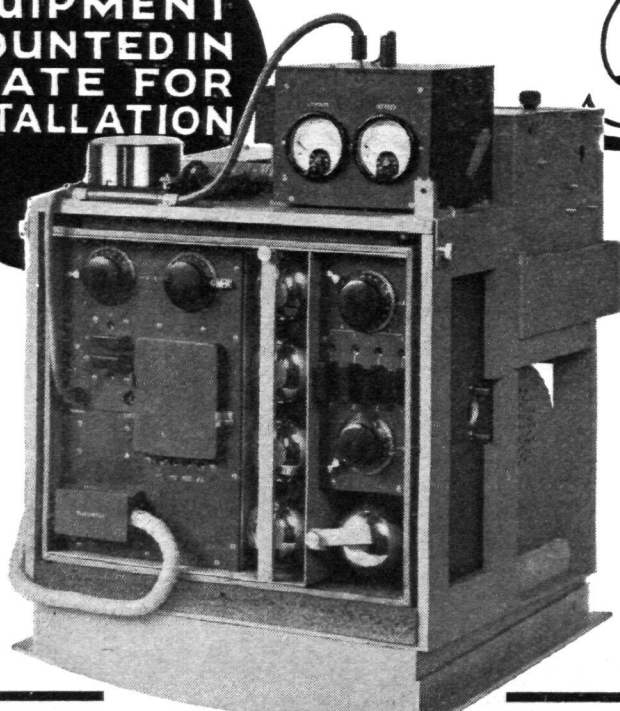
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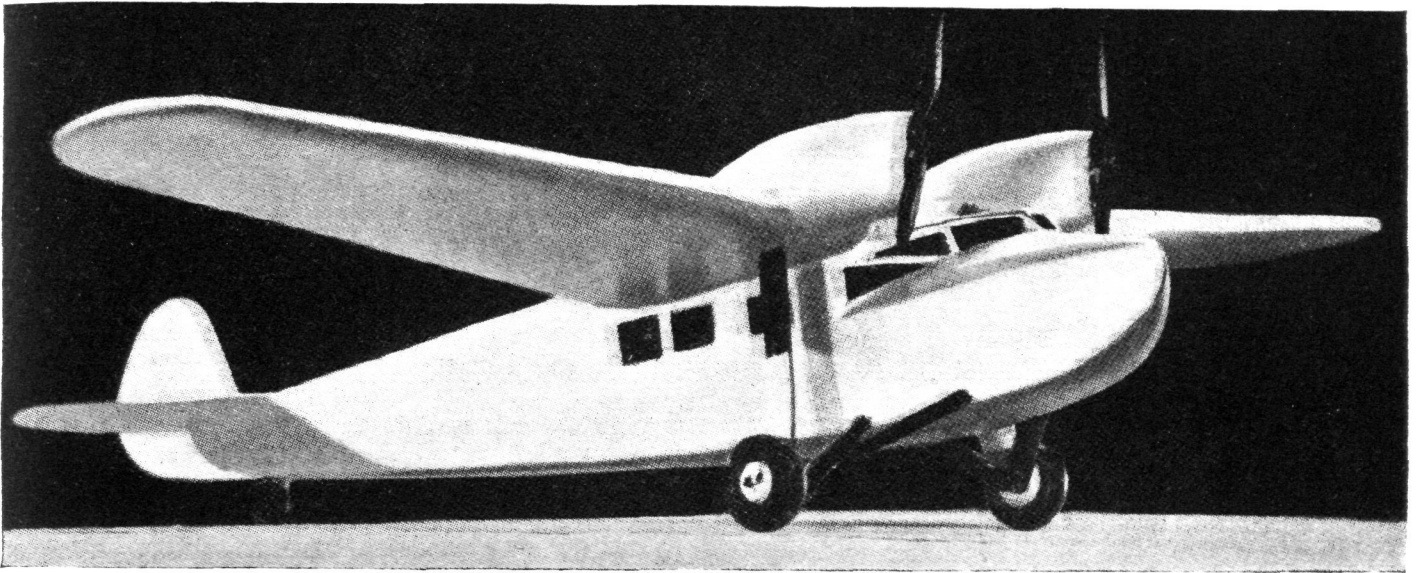
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Air Transport.



THE "CODOCK": In our issue of September 14 we published a side elevation of the machine designed by Wing Com. Wackett for Sir Charles Kingsford-Smith. This photograph of a scale model gives an even better idea of the "Codock." The engines are two Napier "Javelins" and the machine will have a wing span of 52 ft., a tare weight of 2,620 lb., and a gross weight of 4,500 lb. There will be seating accommodation for six passengers, and the range with full load is calculated to be about 500 miles.

AIR MAIL TRAFFIC

THE Postmaster-General announces that during the quarter ended September 30, 1933, 55,100 lb. of letter air mails were carried from this country as compared with 39,846 lb. during the corresponding quarter of 1932; the carryings to India alone were 14,052 lb. as compared with 9,768 lb. Making allowance for the incidence of one more despatch to India in the September quarter, 1933, than in the corresponding quarter last year, the increase in the total letter mails amounted to about 35 per cent., and in the case of India alone to about 34 per cent. Details of the letter air mail traffic are:—

	September Quarter, 1932. lb.	September Quarter, 1933. lb.
India Air Service (including Egypt, Iraq, etc.)	14,052	19,446
African Air Service	4,046	6,085
Other Extra-European Services	6,410	7,619
Continental Services	15,338	21,950
	<hr/> 39,846	<hr/> 55,100

There was also an increase of about 16 per cent. in the weight of parcels sent by air mail, the figures being 40,300 lb. in the September quarter, 1933, as compared with 34,760 lb. in the corresponding quarter of 1932.

FIRST BERLIN-SOUTH AMERICA ALL-AIR MAIL

THE first all-air mail flight from Berlin to South America was completed successfully recently. Some time ago, it may be remembered, the Dornier "Wal" flying-boats used in the experiment arrived at Woolston, Southampton, *en route* for Cadiz, Spain. A Heinkel He.70, piloted by Untucht, flew the first air mails from Berlin to Cadiz at an average speed of 217 m.p.h. At Cadiz the mails were transferred to one of the Dornier "Wals," which took them to Bathurst, Gambia. The flight across the South Atlantic, with a landing and refuelling on board the *Westfalen*, the "apron ship," was made in a little over 15 hr. by the *Monsoon*, whose "skipper" was Herr von Clausbruch. As the distance is in the neighbourhood of 2,000 miles, it would appear that the flying-boat had the benefit of favourable winds.

NEW SERVICES TO MOSCOW

THE new air mail line from Stockholm to Leningrad with connection to Moscow—previously mentioned in FLIGHT—will come into operation from May 1 next year. The manager of the Swedish Aerotransport, Ltd., Capt.

Carl Florman, has recently returned to Stockholm after a week's visit in Soviet Russia, where he and the heads of the Dutch K.L.M., Mr. de Vries, and of the Finnish Aero Company, Mr. Staahle, were the guests of the Soviet air authorities. The aim of the negotiations was to connect the Russian and the Scandinavian lines, and it is understood that the Soviet Government have been very anxious to reach an agreement. In view of the present situation in Nazi Germany, it is not difficult to see why the Soviet authorities wish to establish an outlet to the international air centres without having to cross German territory. The representatives of Deruluft, the Soviet organisation for international air traffic, pointed out that the distance between Moscow and Stockholm can be covered by a modern transport aeroplane in 6 to 8 hours, with intermediate landings at Leningrad, Reval and Helsingfors. As there already exist regular lines from Moscow to Reval and from Stockholm to Reval, it is only a matter of co-ordination and provision of bigger and faster machines. The Soviet representatives declared that there would be no difficulties, as the Russian civil air fleet "already comprises about one thousand machines of different types from small single-engined aeroplanes to big five-engined air cruisers with accommodation for up to 42 passengers. When this new line is established it will thus be possible to travel from London to Moscow in two days by another route than through Germany."

RUSSIA BUYS ITALIAN FLYING BOATS

THE Russian Government has bought five Savoia-Marchetti flying-boats (two Isotta-Fraschini "Asso" 750-h.p. engines). These machines will be used on the 2,800-mile Vladivostok-Petropavlosk route in the Kamchatka Peninsula, which is claimed to be the longest sea-plane route in the world. A Russian pilot, Demchenko, flew the first of these boats 13,670 miles between Sesto-Calende and Kamchatka at an average speed of 146 m.p.h. The S.55's have accommodation for 12 passengers and a top speed of 167 m.p.h. is claimed.

A WARSAW-MOSCOW ROUTE PLANNED

NEGOTIATIONS are proceeding for a Soviet-Polish convention for an air service between Moscow and Warsaw. Col. Filipowicz, the Polish Director of Civil Aviation, accompanied by Maj. Fakowski, is now on a visit to Moscow. A service between Warsaw and Moscow is planned for next year. Poland is also considering negotiations with Germany for a Warsaw-Berlin connection, which, if it is put into operation, will probably displace the present long Berlin-Königsberg-Moscow route.

THE LOG OF THE "ASTRAEA"

Australia to England by Air with Imperial Airways

By HUDSON FYSH (The Managing Director of Qantas, Ltd.)

(Continued from page 1119)

SECTION II.—SINGAPORE-CALCUTTA

We were now well on our way from Australia to England, and it seemed hardly possible that Singapore was being left only on the beginning of the fourth day out from Darwin and that so much interest and change had been packed into such a short time. Each day had turned a new leaf of adventure and not once had we been disappointed. This instalment deals with the Singapore-Calcutta section, and that interest was sustained I will try and express. All from a comfortable lounge seat in the *Astraea*, air travel had made this adventure possible for me, and it can do as much for the ordinary traveller on inauguration of the new route.

July 13, 1933

Twenty minutes before we took the air at Singapore, and while the *Astraea's* four engines were being brought to life, the Dutch Air Mail, a big Fokker, F.18, roared across the aerodrome and headed for Alor Star and Bangkok, the first stages of its long flight to Amsterdam. Its pilot was a famous old Dutch "skipper," with an unpronounceable and unwritable name, and the two passengers, both for Bangkok, were the famous American high-speed pilot, Maj. Doolittle, and his wife.

Soon we, too, were on our way, 6.40 a.m. seeing us away. The weather was good, and with a slight following wind at 1,500 ft. the *Astraea* headed up the West Coast of the Malay Peninsula. Heavily populated areas were flown over and innumerable rubber and coconut plantations stretching over miles of country. Possible landing grounds were completely non-existent. The beaches were oozy mud merging into inland swamp, and the countryside consisted of intensely cultivated areas, jungle or timbered hills. Vegetation of some sort existed on every square inch of land. Assuredly a route only for reliable multi-engined aircraft, well equipped positively to keep in the air and find the next aerodrome, probably hundreds of miles away. The whole Darwin-Calcutta route is of like manner. It is essentially a matter of getting into the air at each starting point, and reaching the next aerodrome with almost complete certainty, intermediate landings of any nature whatever cannot be contemplated.

Soon we pass Penang, apparently a busy port, and with a very fine aerodrome in course of construction.

Alor Star came into view. A small settlement set in a sea of water divided off into thousands upon thousands of little square earth embankments—the Malayan paddy fields. The natives were busy here and there ploughing,

or rather stirring, the muddy water in the plots, each with a pair of lazy water buffalo hitched to a wooden plough—the beasts surged through the mud at a pace almost imperceptible. Other natives were busy planting rice.

Alor Star aerodrome is a big square of open grass land surrounded by high bunds to keep the water from the surrounding countryside flowing in, and the resulting canal acting as a primitive drainage system when not full of water to overflowing.

We were now in the monsoon area and Alor Star had evidently already received its share—we landed in sheets of water, the muddy spray flying over the *Astraea*, drenching the cabin windows so that we in the cabin could hardly see out of them till the machine pulled up at the refuelling point.

On the aerodrome were two machines—the K.L.M. F.18 and a smaller Fokker, an F.7, which had flown over from Madang in Sumatra, completing its regular link with the main Dutch Service. The big F.18 was delayed with magneto trouble, and when it finally got away was watched carefully for performance. The time taken to leave the ground was 20 sec., spray flying in all directions, and the machine showing an inclination to nose down when negotiating patches of water.

Choosing a slightly better take-off run, Prendergast had the *Astraea* in the air in 16 sec., a truly excellent performance in exceptionally bad conditions.

The run to Bangkok was rather uninteresting. First flat jungle country was flown over, then the usual mud-flanked coastline, and lastly another sea crossing out of sight of land. When the city of Bangkok, capital of Siam, loomed in the distance, we were all pleased, and soon we were circling the King's Palace, a magnificent affair in the centre of the city. Again sheets of spray as we landed along a flagged path, indicating the only usable portion of the ground, and the *Astraea* was taxied up to the long row of hangars occupied by the Siamese Air Force.

Since leaving Singapore that morning we had flown 1,000 miles in exactly 8 hr. flying time.

In the environs of Bangkok again, as at Alor Star, there was nothing but water, and roads were scarce. The roads that did exist were all built up and travel appeared mainly to be indulged in by rail or canal. The only connection between the aerodrome and city is by rail, and unless scheduled trains can be availed of it is necessary to hire a special train. The Siamese airport is a busy place, the Air Force owning about 300 aeroplanes of all sizes and descriptions, many of them being of war vintage.

On the day of our arrival the following visitors used the airport—the French Air Orient Air Mail for Saigon; the Dutch K.L.M. for Amsterdam; a Chinese aviator for China; and the *Astraea* for Karachi. Surely an international junction! But owing to the monsoon season to be closed down almost at once for three months.

The Siamese capital is a place both interesting and amusing, and it was regrettable a longer stay was impossible. Next morning we expected to run into the monsoon, and as the best time to cross the mountains was as early as possible, it was early to bed in preparation for an early call. The city has many fine buildings and barracks, a modern railway station, and the Trockidero turned out a first-class hotel.

July 14, 1933

We were up at 3.15 a.m. Had breakfast at 4. Caught the excellent diesel-driven train for the aerodrome at 4.50 and got away by 6.5 a.m. The K.L.M. machine had left 15 min. before us, and



A REFUELLING HALT: *Astraea* made a brief halt on the pretty island settlement of Muntok (about 300 miles from Batavia) to pick up more "Shells."



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AT SOURABAYA : The business of adjustments, refuelling, etc., when *Astraea* was at Sourabaya, Java, caused considerable interest amongst the native population.

soon the *Astraea*, too, was up over the waterlogged paddy fields. It was fine, but cloudy, with heavy cloud masses ahead. The mountains, which form an air navigation difficulty between Bangkok and Rangoon, were ahead, the highest peaks shooting up to 9,000 ft., though only marked on the map at many thousands of feet lower.

Soon we were at 4,000 ft., flying over a layer of thick clouds, with a hole here and there showing fleeting glimpses of the country beneath. The clouds closed in ahead and climbing to 10,000 ft. they were entered. Flying blind in thick murky grey clouds. The windows frosted over with the heavily laden moisture and all we in the cabin could do was to watch the instruments now and again and note the steady climb so as to clear those mountains. Two of the crew were asleep—no one was worrying. Then, just as suddenly, out came the *Astraea* into sunlight. We had just crossed the divide and away below appeared the mountain tops. They fell steeply to the plain and were clothed with the thickest forest right to their peaks. A trickle of white appeared on the mountain side—the foam of cascading water—till lower down it formed into a mountain river, roaring in a broad ribbon of white between the dense foliage. A picturesque sight, indeed, but one calculated to provide a chill to the flyer in a machine ill-equipped for flying over such country.

The remainder of the trip to Rangoon was flown in fair weather, a remarkably lucky feature, and soon, after traversing the inundated areas we were now used to, the *Astraea* was circling the big pagoda at Rangoon. This world-famous Buddhist pagoda is of imposing size and, entirely covered with gold leaf, glistened and shone in the sun—a never-to-be-forgotten sight.

We landed on the aerodrome, having flown 420 miles in 3 hr. 50 min.

Owing to heavy rain and adverse weather reports, a day was spent at Rangoon, and a most interesting day it was, too. The pagodas and Buddhas, some of them of huge size, were inspected with interest. The city, too, has some magnificent modern banks and public buildings, in which marble and bronze supply a finish of luxury and stability. Numerous pretty lakes are to be found on the outskirts of the city, and the native quarters were full of interest.

On Saturday afternoon we attended the local pony races. A magnificent course, improved to the last word, in a picturesque setting of green. In a land where labour is cheap the lawns, trees and shrubs showed minute care and attention. On the grandstands there were 150 big overhead fans spinning, and 100 more in the tea rooms, while some of the numerous private boxes had desk fans installed. The native women in race-day finery, presented a never-to-be-forgotten sight. The beautifully draped garments of the Parsee women were the most pleasing, and the hair and hat decorations of the Burmese women the most peculiar. The coarse black bundle of hair is brought up through an open-topped and brimless hat, like a pot, and

fixed with a comb. Under the hat is stuck, hanging down, a bouquet of flowers. One lady, not content with diamonds on head and in her ears, had these stones stuck in each side of her nose.

The little Arab stallions, trimmest of the trim, all under 13.1 hands, treated us well, one coming away winning 18 rupees.

July 16, 1933

Weather report bad, but took off for Calcutta via Akyab, and got a lucky run as far as the latter place, flying low under a leaden sky and over the usual sea of water. The rain started just before reaching Akyab and we landed in the rain. At Akyab we saw a familiar machine, a "Moth" flown from Australia by Woods, a West Australian Airways pilot. He was stuck up waiting a better weather report ahead.

A quick refuel and into the air again, the *Astraea* lifting from the sodden ground without difficulty, though nearly becoming bogged in taxiing out. Woods wisely decided to stay in Akyab, having only a single-engined plane and not being fitted with direction-finding wireless. Akyab had experienced 6 in. of rain in two days, and it was still raining hard.

The *Astraea* was soon out over the sea, flying in light rain and with black clouds ahead. They could not be avoided, and, flying low to keep the water in sight, with a shock and tremor the big machine hit the first gust. Again the cabin windows misted over and the interior grew dark as the clouds and rain whipped by. Luckily the intense blasts of rain were soon driven through and less turbulent areas flown into, and so it was for two-and-a-half hours in and out of these big storms till after passing the mouths of the Ganges on nearing Calcutta, steady drenching rain was flown into, which made it necessary to locate the aerodrome by direction-finding wireless. This was easily done, and a landing effected at Dum Dum aerodrome. The *Astraea* and her crew had again proved themselves and had flown that day 725 miles in 5 hr. 50 min., flying time. The big machine, safely in the hangar, fairly oozed water for half-an-hour, the cabin inside, despite careful design, leaking a good deal of water and some of the luggage getting wet.

And so ended the survey trip of the *Astraea*, London-Melbourne-Calcutta—21,500 miles at an average speed of a decimal point or so over 120 m.p.h. Machine and engines perfect in every detail, and ready to carry out the Calcutta-Karachi Air Mail run, leaving Dum Dum aerodrome at 5 a.m. to-morrow morning. When this performance is considered in its true light, it is magnificent. It ranks with other epic flights to Australia as the triumph of a good staff and a modern machine.

To-night the second chapter is commenced in The Great Eastern Hotel, Calcutta. We dined at 8.45 p.m., the same time as at the Minto Mansions Hotel, Rangoon—after

returning from the pictures—such is the custom of this country. The monsoon is on and the rain has poured down all day. The story of this flight over country averaging from 200 to 300 in. rainfall per year is a story of efficiency of machine and personnel which to come in its proper place must be told later.

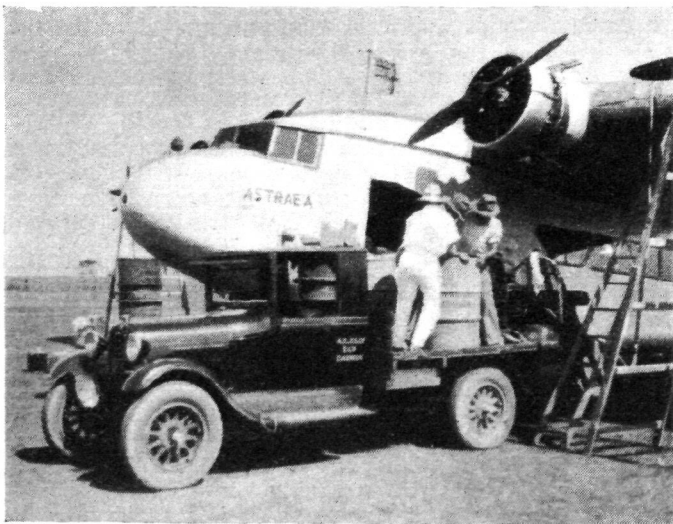
Everything looks drenched and wet, even to the natives, many of whom, though clad only in loin cloth, persist in carrying an umbrella. Everyone has the monsoon season on their minds—the officials have fled to Simla or are home on leave; the shops display large "Monsoon Sale" notices; the Arab pony races at Rangoon yesterday were the "Second Monsoon Meeting," and are run wet or fine. All the talk is "Monsoon," and down comes the rain! Damp sticky heat, but not felt in the comfortable well-ventilated *Astraea* or in the hotels, which are built and serviced to counteract the tropical heat of the country.

SECTION III.—CALCUTTA—KARACHI

The last contribution towards the story of the flight of the *Astraea* concluded with the arrival at Dum Dum aerodrome, Calcutta, after flying through the intensity of the monsoon and being guided to port by the machine's excellent wireless. The final instalments are written from the Grosvenor Hotel, London.

The air journey, intense in its interest and lesson of the advancement of commercial aviation, has been completed in 14 days out from Darwin. If the journey had been undertaken by boat we would still have been in the vicinity of Colombo. Fourteen days out from Darwin! It seemed incredible when the French porter on the comfortable Wagons Lits sleeper put his head round the door and holding up one finger said, "Une heure Paris." Yet two hours later we were having an excellent breakfast over the Channel on the Imperial Airways "Heracles" class 38-passenger air liner, and at 11.15 a.m. on July 24, exactly on time, we landed at Croydon aerodrome.

Calcutta was disappointing. It rained incessantly day and night for the one-and-a-half days we waited to pick up the schedule of the newly-inaugurated Calcutta-Karachi Airways Service. A steady, hot, steamy rain, but despite this handicap the various places of interest were visited. The Black Hole; the beautiful open park in the centre of the city with the Queen Victoria Memorial and various other statuary; the gruesome Burning Ghats, and the never-ending native quarter. A land of rain and damp, police and soldiers, shuttered windows and natives in nothing but loin cloths, but holding umbrellas over their heads. When evening comes along, or the native feels tired, the loin cloth is unwound and forms an excellent sheet covering while taking a quiet sleep. Shroud-like forms line the pavement in front of the huge Great Eastern Hotel with its magnificent air-conditioned dining room, and you stumble over them in the billiards room, while you are as likely as not to meet a big Indian bull standing out on the sidewalk—we left with a bad impression of Calcutta.



ON THE EDGE OF AUSTRALIA : The *Astraea* takes in a supply of "Shell" at Darwin before leaving for the Dutch East Indies.



AN INCIDENT IN AUSTRALIA : The native "King" of Bathurst Island, highly impressed by the visit of *Astraea*—"the White King's Messenger"—gave the airliner a hearty welcome.

July 18, 1933

Arrived at Dum Dum aerodrome—it was still raining steadily, and a miniature lake stretched round the hangar. The *Astraea* got off an hour late waiting for light to enable a safe taxi-ing out to the higher ground, and for weather reports. The local airmen doubted if the machine could be taxied out, but this was successfully accomplished and an excellent take-off made, the *Astraea* almost throwing up a "bow wave" as the muddy water threshed past the cabin windows. A less efficient machine would have been hopelessly stuck.

Allahabad, 480 miles away, was the objective, and after running out of the worst of the stormy area, a landing was made at the excellent aerodrome. A well-served breakfast at the Imperial Airways Rest House—enormous Indian mangoes being a feature of this—and we were well on our way again for the 100-mile run to Cawnpore. Fifty-five minutes was all that was required for this, then two hours for the 240-mile run to Delhi. The *Astraea* was on the ground exactly four minutes at Cawnpore. Time had to be made up, so the mails were handed over and taken with efficient despatch. Between Cawnpore and Delhi the French Air Orient machine on its way to Indo-China passed far below, a fast travelling streak of red and silver.

From Delhi, with its fine buildings, both ancient and modern, and well-equipped aerodrome, the *Astraea* pushed on to Jodhpur, the last stage of the day. We arrived at 6.0 p.m., having flown 1,140 miles in 9 hr. and made up the time lost owing to the late start. Two passengers had been taken on at Delhi and more mails for Europe.

Jodhpur proved a most interesting night stop. The State is ruled over by the Maharajah of Jodhpur. Intensely keen on aviation and horseflesh—a great deal of interest in both is to be seen. The aerodrome and buildings are done in red stone, with appropriate carving, winged horses, and were easily the most modern we had seen on the trip, and carried an air of prosperity and progress. On the outskirts of the town were to be seen excellent horses, polo ponies, cavalry parade grounds and polo grounds. Here were seen the Jodhpur trousers worn in their country of origin.

A tour of the city was full of interest. The natives appeared very friendly and of an excellent type. The native temples and bazaars, the huge citadel perched high on its cliff-surrounded edifice, and the magnificent white marble tomb of the Maharajah, grandfather of the reigning Prince, were full of interest.

July 19, 1933

We were called at 3.15 a.m., and after leaving the luxurious State Hotel, also built in well-carved red stone, arrived at the aerodrome in the dark. A new experience was in store for the uninitiated passengers—a night take-off. This is safe with four-engined aircraft, where the risk of forced landing is, for all practical purposes, eliminated. Soon the *Astraea* was tearing down the pathway of flares on the flood-lit ground and was safely in the air. It was an hour before dawn broke, but meanwhile the passengers had been comfortably reading or making up for lost sleep in their adjustable reclining chairs.

Just before coming into Karachi another magnificent achievement was established by the *Astraea's* wireless officer and equipment. Two-way communication was established with Sydney, and a message sent from the Commander of the air liner saying that the long flight was just about to end at Karachi, and all going well.

The flight of the *Astraea* from London to Melbourne and back as far as Calcutta, then to go into regular air route service untouched except for routine inspection, has, of course, gone entirely unsung, as it was not a stunt flight, but simply a survey trip in the ordinary course of Imperial Airways duty; but when the record established is analysed and the difficulties of such a long unsupported trip weighed, it represents a triumph of good British workmanship, and an excellent crew.

In all, 23,500 miles were flown in 210 hr., including demonstration flights in Australia. (It should be explained here that all Imperial Airways times are recorded mechanically by tel-meter and include taxi-ing out and in on the aerodromes, thus cutting down the recorded speed of the machine if based on hours so recorded.) On the trip from Longreach to Karachi 7,300 miles had been flown in 59 hr. 50 min., an average speed of 122 m.p.h. with engines throttled back to 1,800 revolutions—well below normal cruising speed.

At Karachi we said good-bye to two members of the *Astraea's* crew, Com. Prendergast and W/O. Brown, who were to stay out East.

It was extremely hot at Karachi, but this did not deter from an interesting inspection of the aerodrome—the hangars and Imperial Airways' excellent workshop facilities, the club-house, also the huge airship shed and mooring mast. Breakfast over and Customs and passport formalities being completed, our one desire was to be in the air again to enjoy the cool comfort of a modern air liner as opposed to the ground heat. One was anxious, too, to try the huge 24-passenger "Hannibal" which was to carry us on the long section between Karachi and Cairo.

SECTION IV.—KARACHI—CAIRO

July 19, 1933

This morning starts a new stage in the long journey, the *Astraea*, which had carried us so well, being left at Karachi, and the trip continued in the "Hannibal." We were only nine days out from Darwin, and at 11.15 a.m. on the 24th, five days ahead, we were scheduled to arrive at Croydon Aerodrome, London.

The crew of four are in their places, the baggage and excellent mail load of 1,632 lb., is safely stowed. The seven passengers are in their seats. A shrill whistle blows,

and promptly in obedience the whine of the Bristol gas starter is heard. One by one the four big propellers turn, spring to more active life, and the big air liner is alive, ready for the air.

The largest type air liner to operate in the world. Can this huge machine, with passenger cabins alone over 50 ft. long, take the air? In a surprisingly short run she is off and away, and we are settled in a cabin even more comfortable and slightly more silent than the excellently appointed *Astraea*—one would not have thought it possible.

The "Hannibal" proved a thoroughly comfortable conveyance, and although a very strong headwind was being faced, the air was calm, the passengers settling down to regain some more lost sleep. To the left stretched the waters of the Arabian Sea, while inland lay a panorama of barren hills and sandy desert plains. At last we were out of the tropical East and facing a long trip ahead of desert country in the height of the summer season.

It was cool in the air, but on the ground at Gwadar, the first stopping place, where we landed on flat desert, the heat began to make itself felt. Tea was provided in the small, but substantially built, landing ground building, while a crew of blood-thirsty looking Arabs, whom one would hate to meet on a dark night, pumped 650 gallons of petrol into the air liner.

Diary notes read as follows:—

"1.35 p.m.: Took off from Gwadar. Thoroughly hot on ground, but quiet and ease in 'Hannibal.' Most comfortable.

"2.30 p.m.: Flying over the sea at 6,000 ft. The coast of Persia in the distance. Just had a good lunch served by steward. Perfect day, no bumps, but strong headwind.

"5.0 p.m.: Afternoon tea served. The steward's pantry is a necessary adjunct to these long trips.

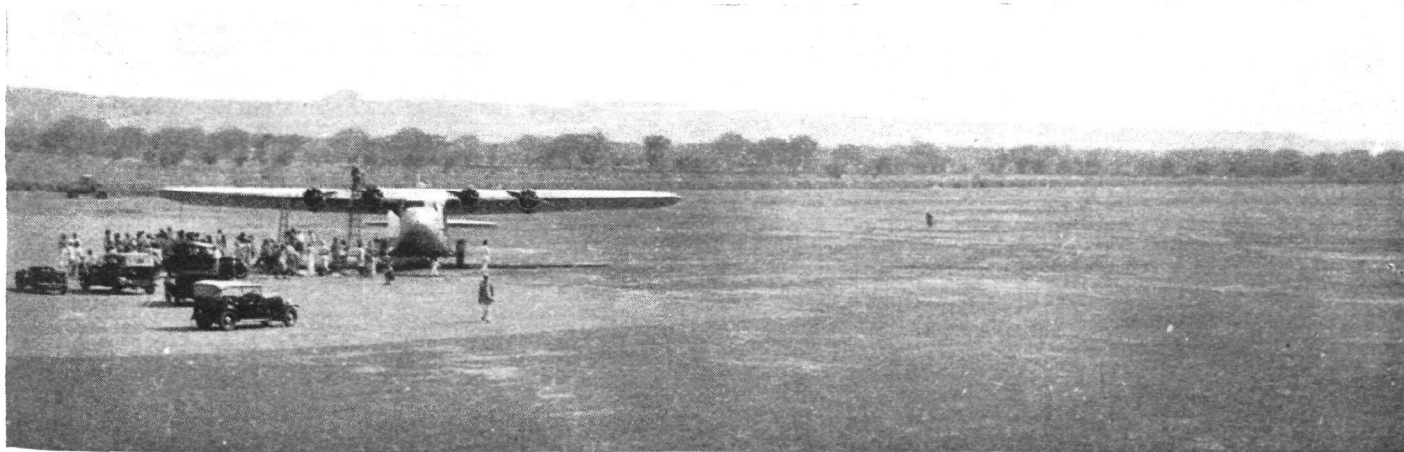
"6.0 p.m.: After passing Jask and crossing the Gulf of Oman, at last over Arabia. Rock mountains and desolate valleys. Lonely in the extreme. Here and there is a small native oasis or a little cultivated terrace on the mountain side. The natives are hostile, the local Sheikh having refused to allow the establishment of an emergency landing ground. A landing would not meet with a very warm welcome. Sand, sand, a vision of Arabs, ships of the desert, sandstorms and mystic Arabia."

At 6.40 p.m. the "Hannibal" landed at Shargah, where we were to stay for the night. We had flown 1,141 miles in 11 hr. 30 min. against strong headwinds for the majority of the journey.

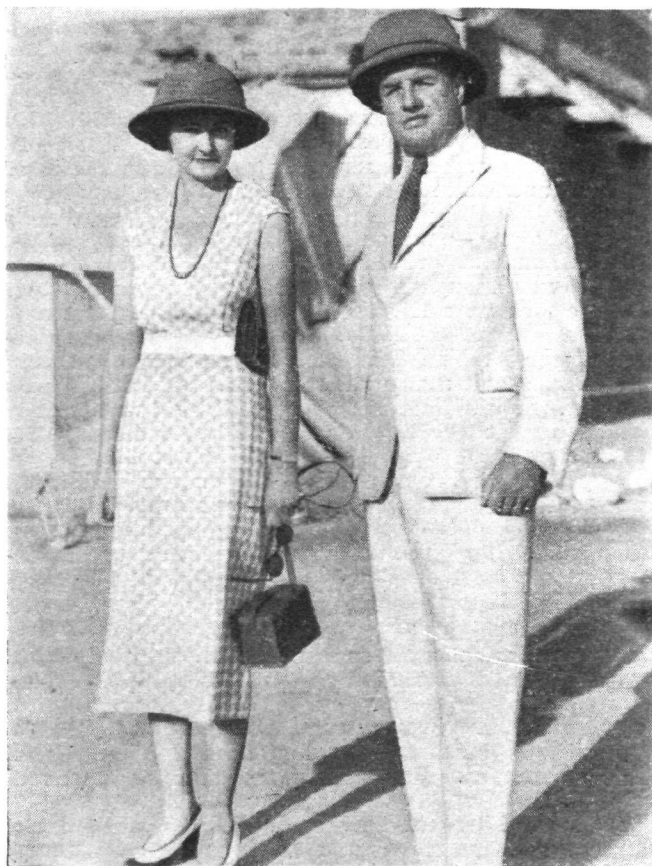
Shargah is a most intriguing place. One is lifted all in a few hours into an atmosphere of the Arabian Desert, of wild Arab tribes and manners and customs, and were it not for air travel, far removed from the ken of civilisation and the white races. Before Imperial Airways established their fort, no white man lived in the village of Shargah, and the lonely spot was only occasionally visited by such.

What an interesting spot Shargah is going to be for Australian passengers!

We taxied in towards Imperial Airways' Fort and on through an opening in the surrounding belt of barbed-wire entanglements. The gates which protect the opening are closed up behind, the Arab sentries take up their position and we are safely inside. Outside the entanglements are about 200 of the most magnificent Arab ruffians it is pos-



IN INDIA: This view gives a good idea of the excellent aerodrome at Jodhpur, the last stage of the journey from Calcutta.



IN CHARGE AT KARACHI: Lt. Com. W. H. Watt, R.N., Officer-in-Charge of the Karachi Airport, with his wife.

sible to imagine. Apparently quite friendly, but a feeling of safety was provided by the separating wire.

On alighting one was introduced to the Captain of the Guard. A gorgeous fellow, requiring a Reynolds to describe the richness of his dress and accoutrements, from his deep red headdress, well-filled cartridge belt, and silver-worked curved dagger scabbard to his sandalled feet.

The fort proper is solidly built, well loop-holed, and has a large central court on to which open various offices, comfortable, well-appointed rooms with fans, and well-furnished mess and rest rooms. Electric light, refrigeration, showers and all modern conveniences exist.

The next person to be met was Sheikh Sultan Ibn Saghir, Al Qasim, Ruler of Shargah ("Ibn" means "son of," and "Al Qasim" is the family name). A most colourful person with direct piercing eyes and a rich dress set off by a beautifully worked, gold-mounted sword and scabbard (when one speaks of gold in Arabia, it means solid gold). His attendants consisted of his son of 7 years, already looking a tough customer, his private secretary, who interpreted, an under-secretary, and special bodyguard of one, a dusky native whose well-oiled rifle had the usual steel sling bands done in figured solid gold. He never moved two feet away from the Sheikh and his chief occupation was working the well-oiled bolt of his short rifle and keeping a sharp look-out.

Maj. Brackley was in the good graces of the Ruler, and an invitation to accept his hospitality in the village overruled the Imperial Airways notice: "Passengers are earnestly requested not to go outside the compound."

The visit to the village was of great interest, but would take up too much space to describe. Suffice it to say that we were entertained on the ceremonial platform in front of the Sheikh's mud-walled village stronghold by a coloured group of head men. A huge copper tray of fruits consisting of fresh dates, figs and mangoes was placed before us. The mangoes were cut with a knife which the Sheikh produced from his belt and passed round. The visitors ate first and then the hosts. Secondly came coffee, no more than a sip being poured into a small handleless cup by the boy attendant. On handing the cup back it was promptly replenished and handed back again. This went on time after time, and the problem was how to get no more coffee without offending. After about six cups, by watching the Arabs, it was discovered that when no more was wanted, the cup was given a good shake when being handed back.

Back to the Fort and after a good dinner to bed, out in the centre court under the stars. Our position was hard to imagine. Yesterday we had started from Calcutta on the border of Burma and passed right across India to Jodhpur. To-day we had travelled on through Karachi, across the Gulf of Oman and along the Persian Gulf to Shargah. To-morrow night would see us in Baghdad in Mesopotamia.

July 20, 1933

Long before dawn we were called by the Persian house boy in Shargah Fort where we had spent the night.

At 5.25 a.m. the *Hannibal* was off the ground, leaving behind the shadowy fort and watch towers dotted on the surrounding hills.

The steward is coming round with magazines. Everything is done to provide passengers with an interesting and comfortable trip. Soon, however, the scenes from the cabin windows become too interesting for reading. As we sped up the coast flying low against a headwind, numerous Arab dhows were passed. Sharks and big diamond fish were numerous in the clear waters of the gulf, and on shore Arab villages and palm groves here and there amidst the boundless desert provided plenty of interest.

Our next landing was on the Island of Bahrein. More villages, forts and Arabs. Pearl fishing is one of the local industries, and several vendors were on the aerodrome with a large stock of inferior pearls, carved pearl shell and other trinkets for sale. Air freights to and from these lonely settlements somewhat resembles those carried on the Q.A.N.T.A.S. out-back routes. Car parts and a battery were noticed amongst other packages. An item of freight, however, which is not carried on the Queensland routes is gold. One parcel contained £2,000 in gold bar and another £1,000 in gold coin.

Our next stop was Kuwait, another isolated centre—where one passenger came on—and then Basra. By this time the headwind had almost reached hurricane force, and the air was full of fine dust, making visibility bad. Landing at Basra was like descending into a huge oven with a forced draught of burning hot air. It was 118 deg. in the shade and more than equalled a heat-wave day at Longreach in Central Queensland. As usual, at these places the local residents said "It was nothing to what they sometimes had." Four passengers came on at Basra. We were glad to be away and headed for Baghdad. It was cooler in the air, and as the heat did not affect the engines of the *Hannibal* in the least, we were soon at a cool altitude heading out over the vast marshes which extend in this part between the Tigris and Euphrates. In the desert haze the ground was sometimes lost sight of and the view was spoilt.

At last, after a long trip battling with strong headwinds, the ancient city of Baghdad was neared. We had left the ruins of Ancient Babylon far on our left, but the Captain came down and flew right past the front of the Ctesiphon, that puzzling ancient monument with its colossal arch which is one of the wonders of the ancient world.

It was now dark, but ahead could be seen the lights of Baghdad Civil Airport. Searchlights and red neon light made the place unmistakable. We landed at 8.45 p.m. Shargah time, and had travelled 974 miles in 12 hr. 25 min. against intense headwinds.

Baghdad, dream city of the past of nearby ancient Babylon and the Ctesiphon, now has its wonder airport. There is nothing quite like it all the way from Melbourne to Croydon. Well designed and equipped, the central administrative building appealed as a model and contained every facility. Booking offices, Customs clearance, post offices, spacious lounges, book stalls, a bar and hotel accommodation, are all in modern efficient style.

The Airport Hotel was full, so we went into the Tigris Palace, passing over the Maude Bridge of Boats on the way into the city. We paid for a drink at the bar in the sixth currency since leaving Australia—nearly a currency a day.

Dinner over and various other odd jobs attended to, we found it was 11.30 p.m., but refusing to be cheated of Baghdad, two enthusiasts hired a taxi and drove round the city at that late hour. The squat domes of the mosques with their wonderful blue covering were impressive. The city had an air of prosperity and progress despite its usual Arab quarters.

To bed at 1 a.m. and called at 2.45, but why worry, *Hannibal* had treated us well in the way of comfort, and a good sleep could be had going along on the Baghdad-Cairo stage.

(To be concluded.)

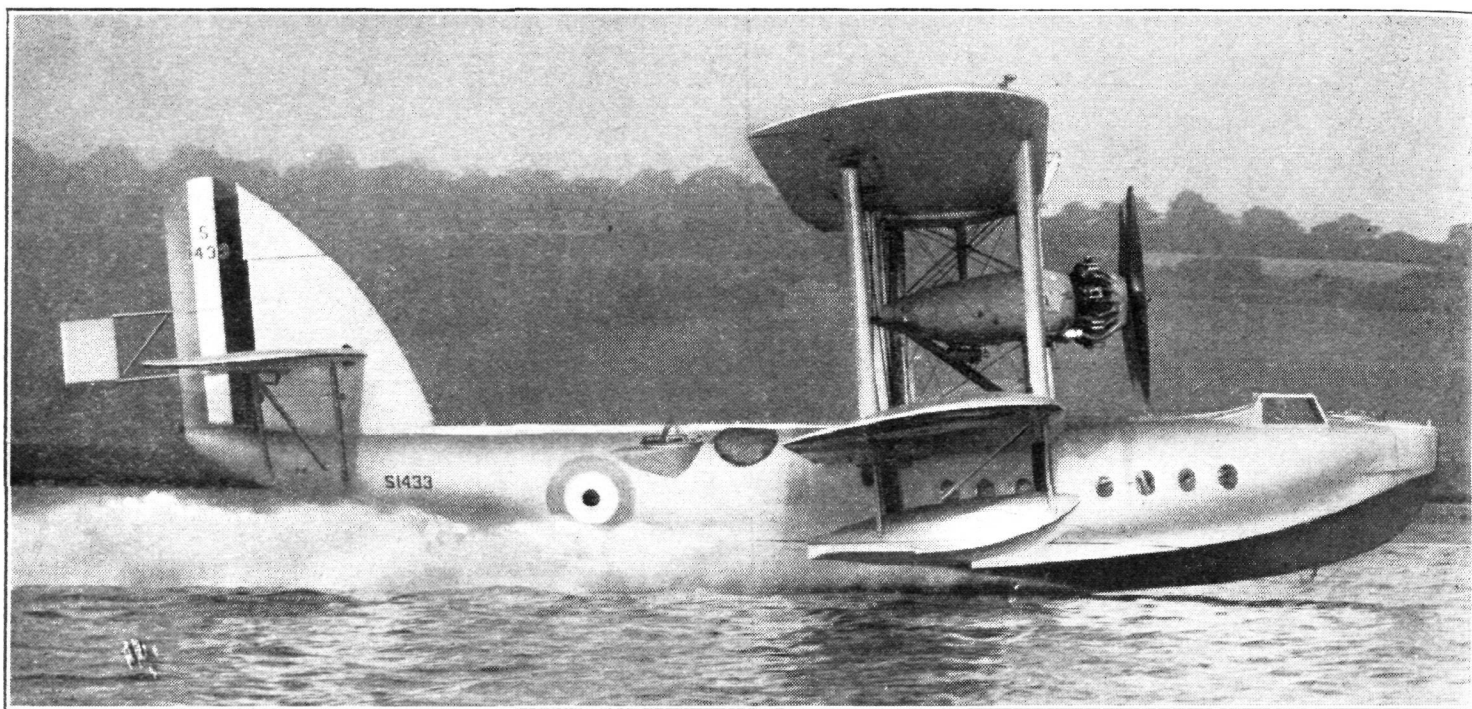


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The Short "Rangoon" illustrated above is one of five that were constructed for the R.A.F. for service in the Persian Gulf.

The main plane spars, built from duralumin sheet and the ribs from duralumin tube, are covered with fabric doped with CELLON. The hull is protected externally with CERRIC Aluminium Lacquer made to the appropriate Air Ministry Specification and its interior is finished with Grey Green CERRIC Cellulose Lacquer. Wing tip floats are similarly treated as the hull.

When it returned from abroad, having completed 3 years' service (including 734 flying hours in the Persian Gulf), this aircraft was thoroughly overhauled and examined by Messrs. Short Bros. (Rochester & Bedford) Ltd., who report as follows:—

"The fabric itself was still in good airworthy condition, the only criticism here being a few blisters on the identification disc.

The hull, both inside and out, had not suffered from corrosion, the protecting coatings all being well maintained, especially at points where local damage had occurred.

The internal condition of the wings was highly satisfactory."

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MADRID-LAS PALMAS AIR LINE

A comprehensive wireless organisation is being prepared in connection with the establishment of a new air route between Spain and the Canary Islands, to be operated by the L.A.P.E. Company (Lineas Aereas Postales Españolas), the organisation which at present operates the Madrid-Barcelona and Madrid-Seville airways. Communication will be effected on both medium and short wavelengths in order to ensure reliable contact even under very unfavourable conditions, following the practice that has been so successfully adopted on the African and Indian air routes of Imperial Airways, Limited. For this purpose the aircraft will be fitted with the Marconi dual-wavelength equipment, Type A.D.37A/38A, which is capable of communication by telegraph and telephone on the wavebands of 40-80 metres and 500-1,000 metres. The short waveband includes the wavelengths which in exhaustive tests proved to be the most suitable for air-and-ground communication in the face even of severe and prolonged electrical storms as experienced in the equatorial zones of Africa and in the Indian monsoons. The medium waveband covers all the wavelengths allotted by international convention to normal aviation wireless services, and also the 600-metres wavelength generally used by ships. For the terminal airport of the projected air route in the Canary Islands a new ground wireless station is to be erected at Gando, Las Palmas. In this station will be installed the latest types of Marconi transmitters, receivers, and direction finders, providing a complete service of medium- and short-wave ground-and-air communication, with wireless navigational aid available on request. For direction finding, the latest type of Marconi instrument, known as the Type D.F.M.4, operating on the Bellini-Tosi principle, is to be installed.

U.S. TRANSPORT NOTES

As the first commercial transport type plane to be equipped with two-row engines, the all-metal, low-wing Boeing 247-A has been undergoing flight tests at Seattle. Performance figures have not yet been announced. The Boeing 247-A is to be turned over to the United Aircraft & Transport Corporation for executive use. It is identical with the sixty Boeing transports which have been delivered to United Air Lines except for the employment of two-row "Wasp Junior" engines in place of single-row "Wasps," for the installation of eight cabin chairs instead of ten, and for an exterior finish of aluminium lacquer. The twin "Wasp Junior" has a rating of 650 h.p. at 2,400 r.p.m., and at an altitude of 7,000 ft. Work has been proceeding at the Boeing Airplane Company at Seattle on fifteen additional Model 247 transport planes, identical with the sixty already in service on the Coast-to-Coast, Pacific Coast and other routes of United Air Lines. Component parts for the planes are coming from the shops, and assemblies are expected to get under way shortly.

Delivery of six Lockheed "Orions" to American Air-

ways within 30 days was completed in October by Lockheed Aircraft Corporation, Burbank, Calif. Claimed to be the fastest plane in transport service, the new "Orion" showed a cruising speed of 206.2 miles per hour at 8,600 ft., during tests conducted by Marshal Headle, factory test pilot. The superspeed "Orion" is equipped with a supercharged "Wasp S1D1" engine, and has an estimated top speed of 230 miles per hour. On delivery of the last "Orion" from Burbank to American Airways' southern division headquarters at Fort Worth, Headle maintained an average cruising speed of 207 miles per hour. Substitution of a trailing antenna for a radio mast gave the "Orion" 7 miles per hour additional speed. The first model, equipped with a mast, had a cruising speed of only 200 miles per hour.

Construction of this company's bi-motor passenger airliner, the all-metal "Electra," is nearing completion at the Burbank factory. Carrying ten passengers, two pilots and a load of mail, the new "Electra," powered with two supercharged "Wasp Junior" engines, will have a top speed in excess of 200 miles per hour, according to wind-tunnel tests. The landing gear will be retractable. The first of the new "Electras" is scheduled for delivery to North-West Airways of St. Paul, Minn., during this month, and two more planes are due for completion shortly thereafter.

AIR SERVICE TO MAJORCA

It is hoped that within three weeks an air service will be started between Barcelona and Majorca. It will be run by the Compania Aerea Mediterraneo, whose offices are in Barcelona. Dornier "Wal" flying-boats, built in Italy, will be used. The service will be twice daily, and the flight will take about 60 min. Passengers leaving Victoria Station, London, at 11 a.m. and arriving at Barcelona at midday on the following day, will be able to continue their journey to Majorca at 3 p.m., which leaves time for lunch before leaving Barcelona.

NEW CENTRAL AMERICAN AIR SERVICE

A WEEKLY mail and passenger service will soon be in operation between San Jose, the capital of Costa Rica, and Port Limón. Preference will be given to mails for Port Limón.

A FINLAND-ESTHONIA SERVICE

An air service between Stockholm and Revel (Tallin), via Helsingfors, has recently been inaugurated by the Finnish Aero O/Y Company.

SUSPENSION OF SERVICE TO EASTERN ASIA

OWING to the interruption of various connections in the Soviet system of air lines, and the closing of the Berlin service, during the winter, the aerial connection between Germany, China, Japan and Manchuria was discontinued on November 1.



SIXTY OF THEM IN SERVICE : A striking night photograph of one of the United Air Lines' new three-mile-a-minute Boeing 247 transports, halting briefly at Salt Lake City in the course of a Coast-to-Coast flight of less than 20 hours. All 60 of the new Boeings ordered by United, now are in regular service on the company's Coast-to-Coast, Pacific Coast, and other routes.

FAST AMERICAN AMPHIBIANS

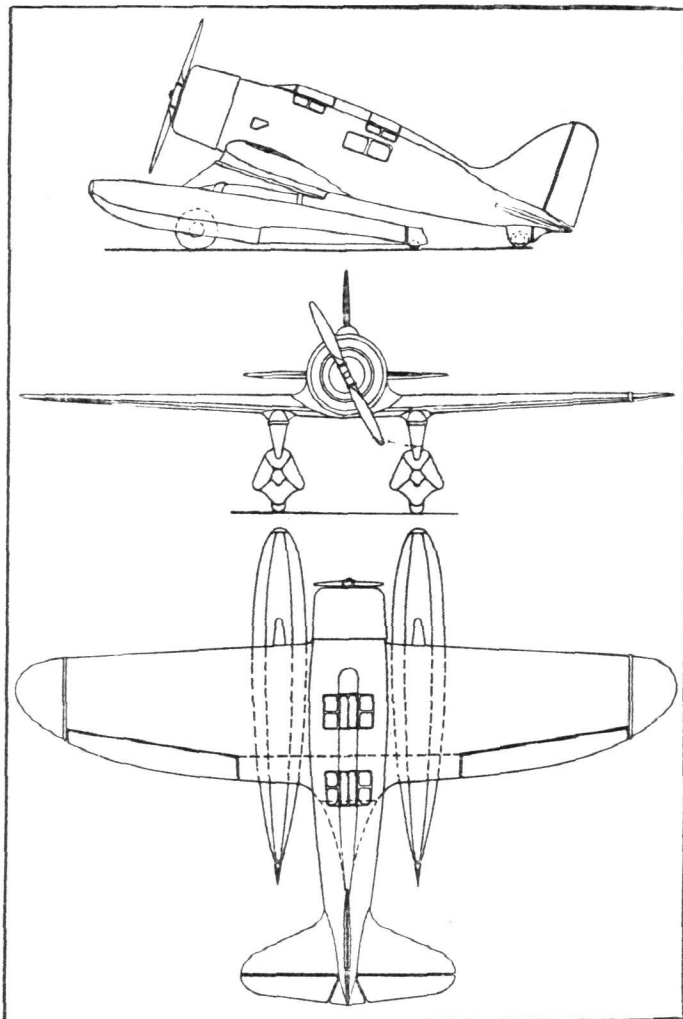
THE Seversky Aircraft Corporation, of 570, Lexington Avenue, New York, is producing three very interesting amphibians, all characterised by an extremely high performance. The basic layout of all three aircraft is similar, so that the following description of the SEV-3 ("Sportsman"), the first of the series to be built, will give an idea of their design.

The SEV-3 carries three passengers in two tandem cockpits. It is a typical American "high-speed" design, *i.e.*, monocoque fuselage, low cantilever wing and radial engine, fitted with a low drag N.A.C.A.-type cowl.

The wings are of the "cellular" or "multi-box" type. Their smooth outer skin is stiffened internally on the top side by corrugated sheets, with the corrugations running the length of the span. On the bottom the skin is stiffened by closed-channel type longitudinals. The fuselage, in the original model, has seating accommodation for three, but the interior may be altered to carry five. The main bulkhead is attached to corresponding webs of each "box" section of the wing, five points of attachment being provided at the junction of wing and fuselage. The fin is an integral part of the fuselage structure, and the tail plane is attached at four points, thus ensuring the distribution of stresses over a large area of skin. Welded-steel tubes are used for the engine mounting, with rubber vibration absorbers at the points of attachment to the fuselage.

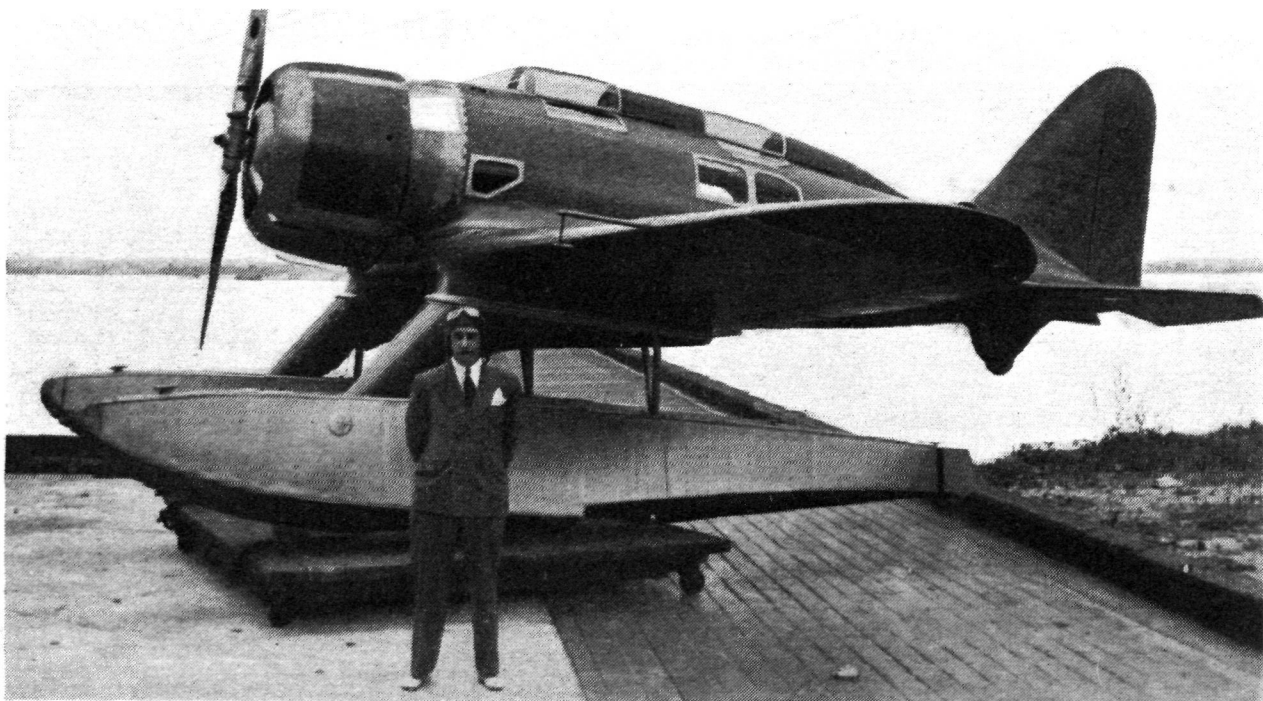
An air brake (known in America as a "descelerator") is carried under the trailing edge of the wing and stretches from aileron to aileron. It is stated that this brake halves the landing run and decreases the landing speed by 15 m.p.h.

Perhaps the most interesting feature of the aircraft is the "universal" landing gear. Twin floats with their wheels are attached to the fuselage by cantilever struts, a pivoting movement being permitted at the points of attachment on the floats. This movement is controlled by small "V" struts located behind the main cantilever struts. As the floats are buttressed with interior keels, they can, in an emergency, be used as landing skids, when landings can be made on ice, snow and rough, marshy or sandy ground. The wheels, which are fitted with hydraulic shock absorbers, protrude through "wells" in the floats. As the result of special attention to the design of the float bottoms these "wells" do not have to be closed to aid take-off. For operation from land the small



THE SEVERSKY SEV-3 : Plan, side and front elevations.

"V" struts are released, allowing an upward movement of the rear of the floats. Thus an ordinary three-point landing



A HIGH-SPEED AMPHIBIAN : An interesting machine designed by Maj. A. Seversky and constructed in New York. The twin duralumin floats contain retractable wheels and when the latter are extended the stern of each float is raised. With a 420-h.p. Wright "Whirlwind" it has an estimated speed of 190 m.p.h. as amphibian or 235 m.p.h. as landplane only. With supercharged 700-h.p. "Cyclone" a speed of 245 m.p.h. is expected as amphibian, or 290 m.p.h. as landplane.

can be made on the two main wheels and a conventional tail wheel. On water the "U" struts are locked and the wheels retracted so that the machine possesses all the characteristics of an ordinary twin-float seaplane. In the event of a forced landing in a confined space the wheels could absorb the initial shock, and then, on the operation of a relief valve, they would retract into the floats, the under portions of which would act as effective brakes. Sudden application of brakes in an emergency is permissible owing to the extension of the floats in front of the machine. A normal retractable land undercarriage can be substituted for the amphibian gear in less than an hour. The wheels, when in the "up" position are housed partly inside the wings and partly in fairings.

The cockpits of the SEV-3 type, which are fitted with dual controls using ball bearings, have sliding roofs and adjustable seats. The pilot has an excellent view for

taking off, landing and taxiing when his seat is in the uppermost position. An anchor is carried in the nose of one of the floats, and can be released by remote control by the pilot from the cockpit.

As a landplane, when fitted with the 420-h.p. Wright "Whirlwind" engine, the top speed is given as 235. When the supercharged 700-h.p. Wright "Cyclone" is used, the speed, as an amphibian is 245 m.p.h., and 290 m.p.h. as a landplane. The flying radius is 800 miles.

The two other models in the Seversky range are known as the SEV-5 "Executive" and the SEV-7 "Transport." The former is a five-seater, while the latter has a cabin accommodating eight passengers and two pilots. This is in two compartments, one of which is quickly convertible into a "hold" for freight.

On October 9, 1933, a Seversky aircraft established a world's record for amphibians with a speed of 180.3 m.p.h.



CAPTAIN BREMER'S WORLD TOUR

ON A "GENET"-ENGINED JUNKERS "JUNIOR"

WE give below Capt. Bremer's own story of his recent world tour in his Junkers "Junior" (Armstrong-Siddeley "Genet"). Capt. Bremer writes:—

"I do not propose in this connection to dwell on the preparations, lasting for several months, which preceded my flight round the world; let us go directly to the day of my departure, viz., May 16.

Early in the morning of that day I started from the Santahamina flying field near Helsingfors. Only one or two of the officers from the flying station and a few newspaper reporters had come down to see me off on my first day's flight on the distance from Helsingfors to Dessau.

But first of all please let me introduce with a few words the Junkers "Junior" plane which I flew. It is equipped with a British 80 h.p. "Genet" motor. It is entirely a standard plane with standard equipment, without apparatus for blind flying or other special features. Even the speedometer was damaged in Stambul, so that I had to fly most of the way without this important instrument. The only thing was an extra petrol tank placed on the front seat, whereby the radius of the machine was increased and a non-stop flight of 12 hours permitted. The machine was the same one with which I had previously made two long flights, one round Europe two years before, and another journey from Helsingfors to Capetown and back, and with which I had also won in 1931, in Stockholm, the first prize in the race round Sweden.

According to programme I flew the first day from Helsingfors to Dessau, from where a few days later I reached Berlin. Further preparations made it necessary for me to remain in Berlin for a few days, particularly as I had to overcome many difficulties in securing visas, flying permissions and decent maps. The last-mentioned task proved in many cases impossible, and I had to resort to very inexact and small maps, even some on a scale of 1:4,000,000.

On May 20 everything was ready for departure, and in the morning I went up from the Tempelhof flying field to fly to Budapest, from where I continued the following days via Istanbul, Aleppo, Bagdad and Bushir to Jaski. The journey, which had so far progressed according to programme in spite of bad weather in Europe and Asia Minor, was interrupted in a very surprising way in Jaski. As my experience in Jaski was the only one of its kind throughout the whole journey, I think it deserves to be reported in some detail.

Delay in Persia

When I arrived at the Jaski flying field, which is typical of a Persian village aerodrome, nobody was there to meet me. It was some time before a somewhat young customs officer made his appearance asking for my papers. I handed them to him with a remark that they should be in due order. The man disappeared, and I stayed on to examine my machine and to get it into order.

While waiting for the customs officer to return, I tried to purchase some fuel from the Shell representative, but learned that the Persian authorities had forbidden him to sell any till a doctor's examination had taken place. I had to wait three hours for the doctor, a scandalously long time, since the investigation was limited to a hand-shake of the worthy man and to his greeting "How do you do?" Thereafter the question of fuel was easily settled.

The Persians seemed, however, to suspect that something was wrong with my papers, since after I had again waited for some time, the customs officer returned, and simply forbade me to continue. I was naturally very annoyed with the arbitrariness of the Persian authorities, but I had to content myself with spending the night in Jaski. There were no hotels in the village, but I was lucky in meeting a British telegraph officer, Mr. Norman L. Penfold, who put me up in his house.

I spent a very pleasant evening with him and his wife, but was again disturbed by the intervention of the authorities. A group of five people, consisting of the medicinal man mentioned above, the customs chief, a customs official, an officer and the chief of the police, arrived at Mr. Penfold's house. I had no opportunity of giving them an account of my journey, and stated that I had arrived



SPRAY: What Capt. Bremer saw of the Niagara Falls.



CAPT. BREMER'S WORLD TOUR : Sketch map showing the routes followed.

from Bushir, and that my papers were all in order. They did not, however, believe my assurances, and firmly told me not to leave Jaski. I was thus practically arrested. The only thing which was missing was that these high Jaski gentlemen had not put me under the observation of a guard, although such an attention had been paid to my machine, as I discovered when later I went down to my Junkers and saw four soldiers with fixed bayonets on duty.

When in the morning my renewed requests to get permission to continue were refused, Mr. Penfold telegraphed on my behalf to Helsingfors urging that steps should be taken to get me out. The request from the Finnish foreign office sent to the Minister in Moscow was forwarded to Teheran, and late in the evening word came through to Jaski that I was to be set free. It was, however, already too late to continue that day, and I had to remain another night in Jaski.

Dogged by bad weather

As I have already mentioned, the weather was not favourable during the first part of my journey. Fogs, rains and storms had made flying difficult in Europe, and in the deserts of Asia Minor and Persia terrible sandstorms prevailed. I had to fly in such dense clouds of dust that frequently visibility was very bad indeed. The dust even merged through the seams of my clothes, irritating me terribly, and I cannot cease to wonder at the fact that the motor, which at the end of each day was covered with a thick layer of dust—even the propellor was covered by an extremely thin layer of dust—could run smoothly all the time without a single choke.

But in India the weather was still worse. After I had left Jaski I met on the sections Jaski-Karachi-Jodhpur-Allahabad new sandstorms, strong and shifting winds and rains. Though I had realised that the rains in India would offer perhaps the greatest difficulties, I was not able to arrive before the rainy period, having been delayed almost one month before the start and still further delayed in Berlin.

As a matter of fact the distance Allahabad-Calcutta-Rangoon-Bangkok was most difficult of all. The rains were terrible, and many times I could only wonder at the fact that all the worst climatic difficulties such as thunderstorms, hurricanes and fogs had gathered in these parts.

I do not care to report in detail my flight from Calcutta to Bangkok. Only a pilot will understand what it feels like to be without blind-flying equipment, without speedometer, etc., and to have to fly for hours in an unknown environment, unable to see anything, and to have to climb two kilometres in the impenetrable darkness to avoid the mountains, to be tossed about in a terrible storm, the power of which was sometimes up to 70-90 miles per hour.

After I had left Bangkok the rains diminished, though the weather still remained gloomy, stormy and unfavourable till I reached Shanghai early in June via Hanoi and Hong Kong. I did not remain in the town more than the usual night, and continued via Tsingtau and Keijo to Tokio, where I landed on June 9.

A welcome in Tokio

The first part of my journey was thus completed, and I found a few days' rest in Tokio very welcome. The reception there was splendid, and the days I spent there were the most pleasant during the whole flight. The unlimited hospitality of the Japanese was quite a surprise to me.

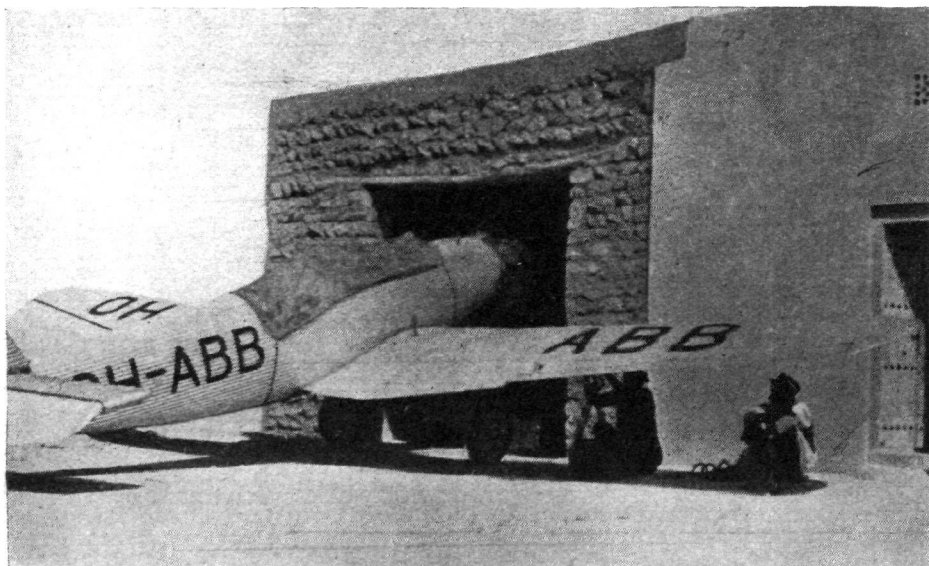
On June 15 I embarked on the *Chichibu Maru* for the passage to America. The Junkers "Junior," of course, could not have made a non-stop flight to Hawaii and further to America. My original plans to fly via Siberia and Alaska I had to give up, as the Russians refused to grant me permission to go via Vladivostok to Alaska. The journey over the Pacific took me nearly two weeks, so that I arrived at San Francisco at the beginning of July.

Across America

In flying over the American Continent I again had bad weather all the way. I arrived at El Paso from Phoenix in the midst of a furious thunderstorm, and a very thick fog lay over the land all the time from Chicago-Montreal-Washington. Still the weather in America and Canada was much better than it had been in India and China. The journey across the American Continent terminated in New York on July 20.

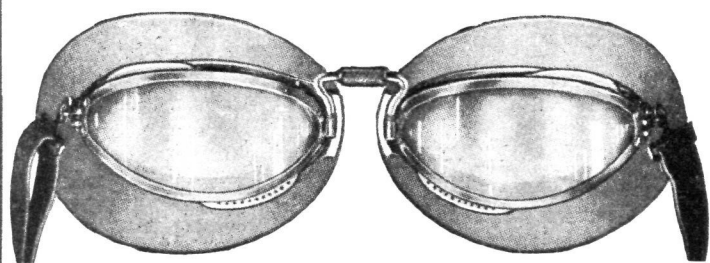
In America a European pilot has a chance to see the latest things in the field of aviation, and it seems to me that America will shortly be far ahead of the old world in these matters.

The enormous crowd which in America devotes itself with energy and purpose to aviation seems to constitute America's strength as far as aviation is concerned, and the basis on which a development beyond the rest of the world can be founded. I may perhaps state that while in Washington I had an opportunity to meet Balbo, who had just brought his squadron there from New York. Balbo made a very pleasant impression, and Italy must be congratulated on having as her Aviation Minister a man who is himself a pilot of the highest order and a man who is able to take such an active part in the development of aviation in his country.



CURIOSITY ? " Junior " appears anxious to see what the interior of a Persian hut at Jask looks like.

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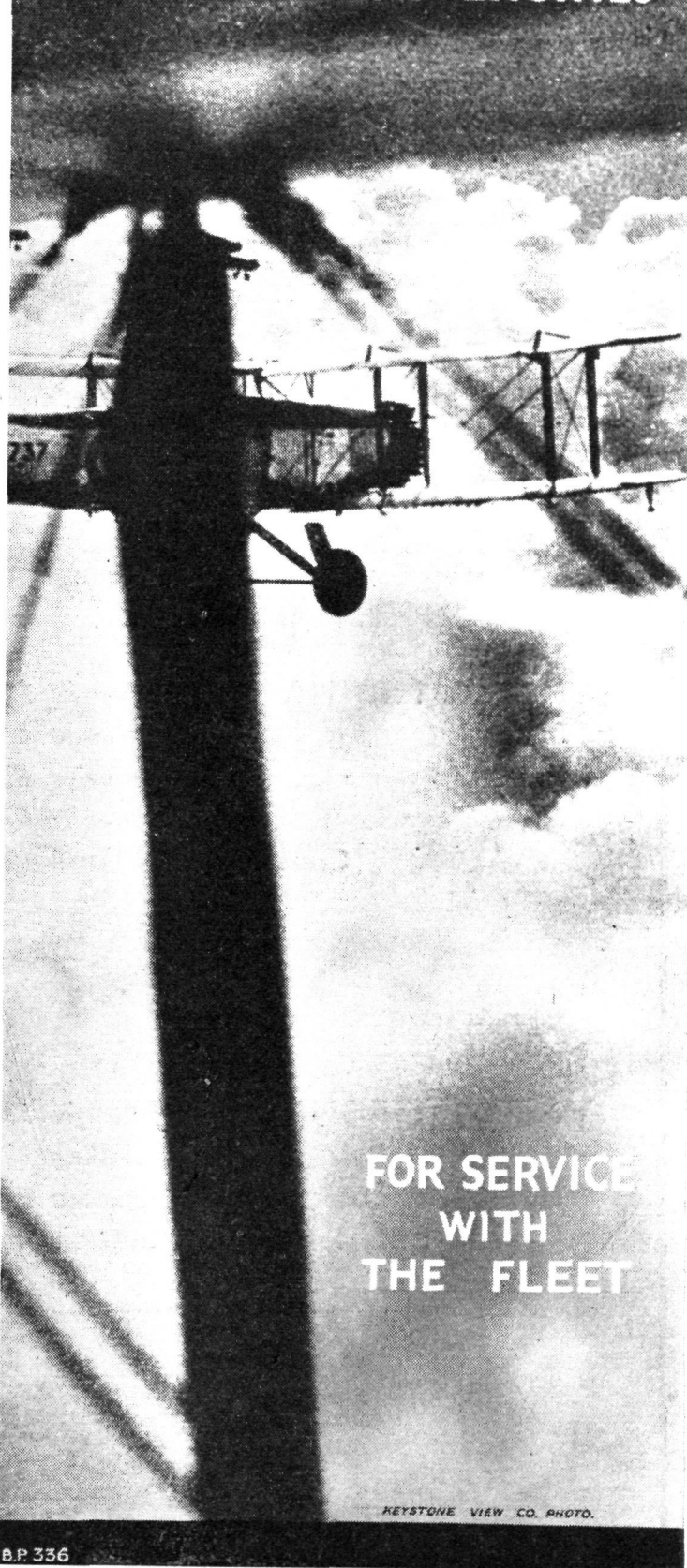
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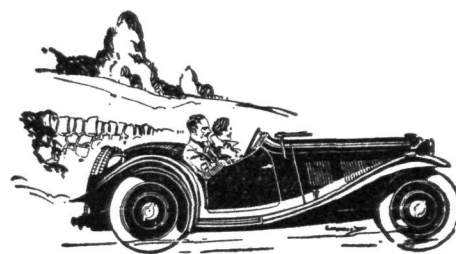
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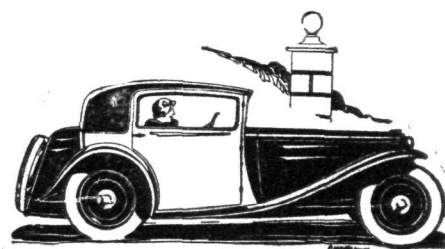
Chassis £160 0 0
Two-seater £199 10 0
Ex Works



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The M.G. MAGNA

Chassis £245 0 0
Two-seater £285 0 0
Four-seater £299 0 0
Salonette £345 0 0
Continental Coupé £350 0 0
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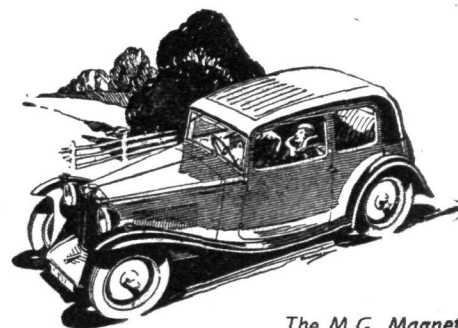


The M.G. Magna Continental Coupé

The M.G. MAGNETTE

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Four-seater £399 0 0
Pillarless 4-door Saloon £445 0 0
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The M.G. Magnette
Pillarless 4-door Saloon

A modified version of the popular J.2 M.G. Midget.
A smart Continental Coupé as an addition to the range of M.G. Magnas.
The M.G. Magnettes with larger engines and pre-selector gearboxes on all models.
De luxe equipment, including D.W.S. 4-wheel jacking system available on all types.

During my flight I passed through 22 countries in all. I should like most of all to point out that on a journey of this nature, any pilot, no matter how many languages he knows, will always meet with many difficulties in connection with customs and other officials. In eleven countries my camera and my gun were sealed, and once I was not even permitted to transport them with me in my plane; instead they were sent by train to my next landing place. It was also most annoying that in Istanbul my diary and some of my European flying permissions were not returned to me, which on my way home was rather distressing. It seems to me that journeys of this nature are unnecessarily impeded by obstacles of this kind, which constitute a hindrance for the development of aviation as a whole. I think there is scope for the International Aviation League to improve these things.

Considering the very bad weather conditions—often the situation had been so critical that I had feared the worst—I am very thankful indeed that I was able to fulfil the journey. In this connection I must state that I am indebted for the successful accomplishment of the journey most of all to the excellent Siddeley motor, which ran regularly all the time without even the slightest disturbance, and also to the good piloting qualities of my plane, and further to the well-organised fuel supply and other service of the Shell company, which all over the world is capable of supplying the pilot with anything he may require."

Capt. Bremer arrived from New York (by boat) at Bremerhaven on July 28, and flying to London and Paris on August 1, arrived back in Helsingfors on August 13, having flown *via* Dessau and Malmo.



INTRODUCING THE C.30 P.

Mr. de la Cierva demonstrates his latest type

REPRESENTATIVES of the Press, and others interested in the subject, were the guests of the Cierva Autogiro Company at a demonstration at Hanworth last Wednesday of the production model of the Autogiro type C.30. Mr. de la Cierva himself carried out the demonstrations, which included fast and slow flying, landing without run, and take-off with very short run. The total absence of wind made the demonstrations all the more convincing, since the still-air performance of the machine was strikingly brought out.

We illustrated the new machine in last week's issue of FLIGHT, and it is only necessary to add here that with the fitting of the 7-cyl. Armstrong-Siddeley "Genet Major" engine, and various improvements in the machine itself, the performance of the C.30 P has increased to a remarkable degree. The company quotes a top speed of 120 m.p.h. and a cruising speed of 100 m.p.h. We believe both figures to be very conservative. Actually the machine appeared a good deal faster. The short take-off and the steep descent followed by a landing without any run indicated that the improvement in the performance at the

upper end of the scale has not spoiled the characteristics at low speed. It would be interesting to see what difference a variable-pitch propeller would make. A speed range of 8:1 makes considerable demands on a fixed-pitch airscrew.

The fundamental aerodynamic problems of the autogiro having been solved, the popularity of the type will depend largely on two factors—cost and maintenance. First cost is largely a question of quantity production. Maintenance will depend a great deal on the quality of such items as the rotor head with its associated controls, and on the undercarriage. It is reassuring to know that the rotor head, etc., of this machine was made by the Mollart Engineering Company, and that the large centrifugal stresses are taken care of by Hoffmann bearings. A machine which descends almost vertically calls for good shock-absorbing qualities, and it is significant that Mr. de la Cierva chose Dowty "legs." The fuselage portion of the machine was built in the Heston workshops, which added their valuable share in this co-operative effort. The general result is good, and the C.30 P. can now be considered ready for the market.



"LOOK PLEASANT, PLEASE": Mr. Juan de la Cierva and the C.30 P pose for the cameramen at Hanworth.
(FLIGHT Photo.)

Clirisms from the Four Winds.

R.A.F. West African flight

THREE Vickers "Victoria" troop carriers of No. 216 (Bomber Transport) Squadron, which left Heliopolis on October 14, arrived at Tamale, Gold Coast, on Saturday, November 4. On Tuesday, November 7, they flew on to Accra. After a rest at this place the flight continued on November 12 to Wagadugu, French West Africa. From here they will proceed to Kouroussa, French Guinea, and to Freetown, Sierra Leone.

Antarctic flight

WHEN the supply ship *Wyatt Earp* arrived at Dunedin from Norway, three explorers, Sir Hubert Wilkins, Lincoln Ellsworth and Bernt Balchen, were united for the forthcoming trans-Antarctic flight. The *Wyatt Earp* sails early next month for the Ross Sea, from where the explorers will set out on a 3,000 mile air survey of the Antarctic regions.

Detroyat wins his third Michelin Cup

FLYING a five-year-old Morane "Saulnier" monoplane with 300-h.p. Hispano radial air-cooled engine, Michel Detroyat has gained the Michelin Cup for the third time by covering the star-shaped course at an average speed of 222.537 km./hr. (139.5 m.p.h.).

The Dewoitine makes history

PILOTED by M. Robert Bajac and M. Launay, and carrying seven passengers, the Dewoitine three-engined monoplane "Emeraude" recently flew from Le Bourget (Paris) to Marnagane (Marseilles) in 2 hr. 53 min. The return flight was made in 2 hr. 58 min. It is expected that this machine will shortly be tested on a flight from Paris to Malmo (Sweden) and back. On November 10 the same machine made a rather wonderful flight from Paris to Dakar in French West Africa, a distance of about 3,000 miles, in less than 24 hours, carrying a considerable number of passengers. Air France's new machine promises to be a valuable addition to the fleet.

The Lindberghs

COL. and MRS. LINDBERGH arrived at Geneva by seaplane on Wednesday, November 8, from Holland. On Saturday morning, November 11, they left Geneva for Lisbon, but on the following day were reported to be down at Santana, in the province of Santander. Later it was found that they had been forced down by fog on the River Minho, near Candelas de Tuy, about 25 miles from Vigo.

Testing the Antoni Wing

CAPT. REX STOCKEN has been down at Brockworth aerodrome this week carrying out flying tests with the Breda monoplane which the Gloster Aircraft Co., Ltd., has fitted with the Ugo Antoni variable-camber wing. The first flight test, it may be remembered, was made some weeks ago by an Italian pilot, and it was found that, although the camber gear worked satisfactorily, the rudder of the standard Breda was rather too small. A larger rudder has now been made, and the test flights are being continued.

Russo-Belgian Helicopter Success

THE rebuilt helicopter which crashed during a test flight in 1930 was flown for the first time on October 19 by the Belgian pilot Robert Collin and remained in the air for 6½ min. On October 25 a second flight was made, this time of 9 min. 58 sec. duration. The helicopter has been designed by M. Nicolas Florine, a Russian engineer who has become a Belgian subject, and the cost of the work has been undertaken by the Belgian National Fund for Scientific Research. The machine was built at the Rhode-Saint-Genese laboratories. An engine of 200 h.p. is fitted and drives two direct-lift airscrews of 23 ft. 7 in. diameter. These airscrews are mounted one at each end of the machine and have their axes slightly tilted.

Aerodrome for Dinard

THE French Air Ministry proposes to make a grant of 185,000 francs towards the cost of laying out an aerodrome at Dinard, and building a hangar which is to be 82 ft. by 66 ft. and 15 ft. high.

New French machines

THE French Air Ministry has placed an order for 60 new fighter machines. Some will be built near Paris and some at Toulouse.

Wreckage of airship found

FISHERMEN have located the wreckage of an airship 2 miles off Minfi, Sicily. It is presumed to be that of the airship *Dixmude*, which went down in a gale off Sicily in 1923, 54 lives being lost.

Altitude record claim

SIGNOR NICLOT, an Italian airman, claims a new height record for light seaplanes. He attained a height of 25,900 ft.

Flying on one engine

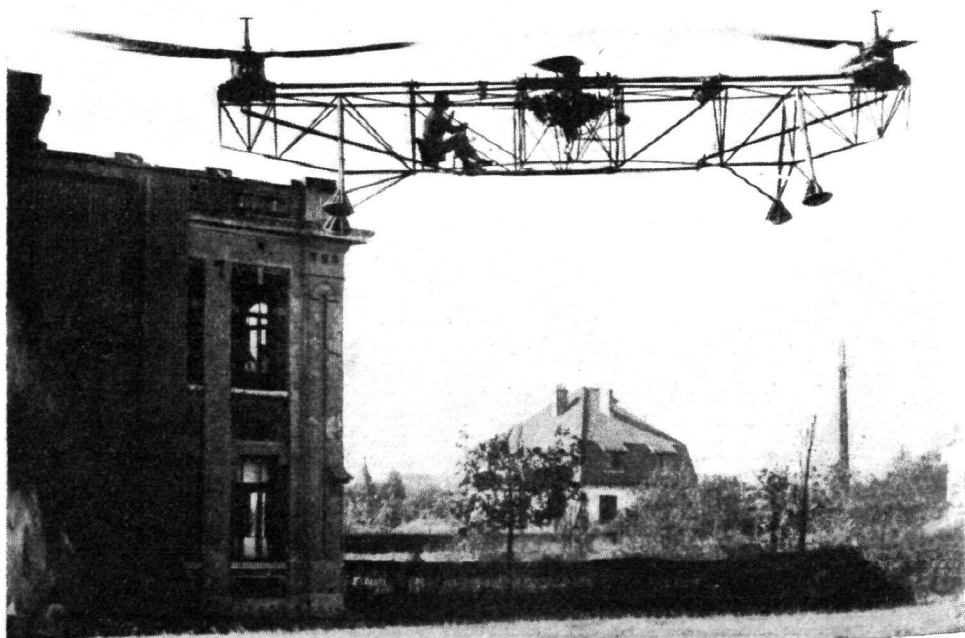
Nor long ago an interesting experiment was made with one of the Douglas "Airliners." These machines are twin-engined, low-wing cantilever monoplanes, with two engines of 700-h.p. each. When taking off from the aerodrome at Winslow, Arizona, which is situated 4,500 ft. above sea level, the pilot ran along the runway for 2,200 ft. and then cut-off one of the engines, continuing his take-off on the remaining one. Climbing to 9,000 ft. the trip was continued at that height to Albuquerque, New Mexico, 240 miles away. The speed was 120 m.p.h.

Colonel the Master of Sempill

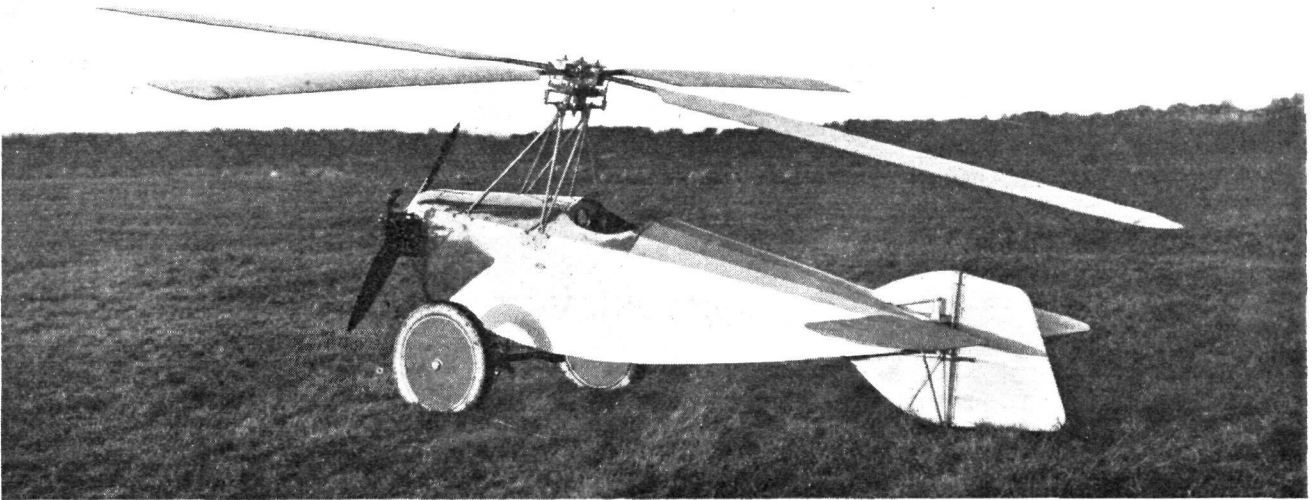
WE are glad to learn that Colonel the Master of Sempill continues to progress so favourably that his general condition is said to be excellent. The hospital authorities are now satisfied that there is no internal injury, and though he will naturally be confined to hospital for some time to come, there is no reason to expect anything but a slow and steady recovery.

50,000 for light plane record

THE French Air Ministry has just offered a prize of 50,000 francs for the French aircraft constructors whose machine establishes, before January 1, 1934, a speed record over a course of 1,000 km. (623 miles). The class of aircraft to be used must be a single-seater of the "second category" of light aeroplanes, i.e., not exceeding 450 kg. (990 lb.). The world's speed record over this distance is at present held by the German pilot Untucht on a Heinkel He-70 with 630-h.p. B.M.W. engine. His average speed was 347.477 km./h. (216 m.p.h.). It is probable that one of the Coupe Deutsch machines may have a try at the record.



BREAKING THE RECORD: The Florine helicopter has succeeded in remaining aloft for 9 min. 58 sec. The small propeller above the engine is fitted chiefly to keep the engine cool when the machine is hovering.



THE KAY GYROPLANE : The special feature of this machine is that the angle of incidence of the rotor blades can be altered by the pilot during flight. One of the directors of Kay Gyroplanes, Ltd., is Lt. Col. M. Ormonde Darby.

The Vuillemin Squadron

THE "political and colonial" flight of 30 French military aeroplanes under the command of General Vuillemin is not, it is claimed, in any way an attempt to imitate the flight of 24 Italian flying boats under Balbo to America and back, but is in the nature of a plain air service exercise. The Vuillemin squadron assembled at the Istres aerodrome, Marseilles, for the start of its flight to Africa, and was held up there by bad weather for some considerable time. The machines used are Henry Potez 25, type T.O.E., fitted with 450-h.p. Lorraine engines. The 30 machines will fly in formation, or rather in a series of formations, headed by three machines, of which one will have on board General Vuillemin. Then will follow two groups, each consisting of two flights of six machines each, and finally three machines will bring up the rear. The machines each carry a crew of two, and are provided with desert equipment. The route chosen for the flight is as follows: Istres-Perpignan-Cartagena-Rabat-Colomb Bechar-Adrar-Bidon 5-Gao-Mopti-Bamako-Tabacounda-Dakar-Kayes-Segou-Ouagadougou-Niamey-Zinder-Fort Lamy-Fort Archambault et Bangui. The return journey will be by the same route as far as Niamey, thence via Gao and Adrar-El Golea-Touggourt-Tunis-Alger-Oran-Mecjnes-Los Alcazares and Istres. The total distance is one of approximately 25,000 km. (15,534 miles). After waiting at Istres for favourable weather, the Vuillemin Squadron left on November 8 for Perpignan "and places beyond." It shared to some extent the fate of the Balbo flying boat squadron in losing one machine early in the flight, but

fortunately the crew was uninjured. A second machine was "written off" at Rabat the following day, but the remaining 28 are continuing the flight, and at the time of going to Press they had reached Adrar, where they arrived on November 12.

The Flowing Bowl

PUNCH with a punch in it is always welcome (to most of us, anyway) at this season of the year, and none more so than that variety known as "*Punch*" *Almanack*. With the corners of our mouth still twitching over last season's brew, the 1934 jorum was placed before us last week—unfortunately, on Press Day. We tasted it, and found it good. So good, in fact, that we were unable to express our appreciation in that week's issue of *FLIGHT* (some scribes, it is said, write all the better after a plentiful helping of good brew—but not so in our case!). However, we are now more or less normal, and so hasten to put on record that "*Punch*" *Almanack* for 1934 has lost none of its excellent flavour and kick, and the ingredients, coloured, black and white, and type are, as before, of the best quality. So fork out your shilling, draw up your chair, and enjoy yourself.

Testing the Blériot "Transatlantique"

ACCORDING to our French contemporary *Les Ailes*, there is some talk of the *Service Technique* taking over the further tests of the Blériot Transatlantic flying-boat. The Blériot works, it will be remembered, have been closed down. There is also a rumour that M. Blériot may join forces with René Couzinet.



WAITING FOR WEATHER : The Henry Potez T.O.E. biplanes ("Lorraine" engines) at Istres aerodrome in readiness to start the flight to Africa. General Vuillemin is in command.

ECONOMICAL FLYING

The Ramor K.E. 14

THE Ramor Aircraft Factory of St. Peter, near Gras (Austria), has built a four-seater travel aircraft, type K.E.14, which was designed by the German engineer Kalkert, of Weimar. This aeroplane is a cantilever low-wing monoplane of good flying qualities.

Wing: The wing is of the two-spar type. The centre portion forms an integral part of the fuselage. The two extension planes are attached to the centre section by means of four bolts on each side. The wing is of wooden structure and covered with plywood so as to make it stiff in torsion. Only the ends of the elliptic wing have fabric covering. The two extension wing portions can be hung lengthwise on the fuselage for road transport and garaging.

Fuselage: The fuselage, of rectangular cross-section, is also of wooden structure with plywood covering. It has a four-seater cabin with six small windows on each side.

Empennage: Of wooden structure with plywood covering; the rudder and elevator are covered with fabric. The fin and tailplane, of cantilever type, are easily detachable. The incidence of the tail can be adjusted on the ground. The control surfaces are operated by means of torsion rods and cables.

Undercarriage: The landing gear, of bent-axle type, has a track of 1.9 m. The two wheels are suspended by rubber cables.

Power Plant: The aircraft is equipped with an air-cooled four-cylinder 100-h.p. "Gipsy I" engine, arranged on a steel-tube framework which is attached to the fuselage by means of four bolts.

The 60-litres fuel tank is mounted in the fuselage behind a fireproof bulkhead. A 35-litres fuel tank is located in the wing centre-section.

Dimensions and Performance: Span, 11.14 m. (36 ft. 7 in.); length overall, 7.5 m. (24 ft. 7 in.); height overall, 2.3 m. (7 ft. 6 in.); wing area, 17 sq. m. (183 sq. ft.); weight empty, 450 kg. (990 lb.); useful load, 330 kg. (726 lb.); total weight, 780 kg. (1,716 lb.); wing loading, 45.88 kg./sq. m. (9.4 lb./sq. ft.); loading, 7.8 kg.-h.p. (17.2 lb./h.p.); maximum speed, 162 km./hr. (100 m.p.h.); cruising speed, 140 km./hr. (87 m.p.h.); landing speed, 72 km./hr. (45 m.p.h.); normal range, 700 km. (435 miles).

F. W.



25 H.P. PER OCCUPANT: This Austrian Ramor K.E.14 carries four people on a de Havilland "Gipsy I" engine.



THE GRAND PRIX AND THE ARMAND ESDERS CUP

MR. ARMAND ESDERS, the well-known Paris dry-goods merchant and member of the Board of Governors of the Aero Club of France, has presented cash prizes to the amount of 200,000 francs, together with an organisation fund of 20,000 francs, for each one of three races, to be termed "the Grand Prix of the Aero Club of France," to be flown during 1934, 1935, and 1936 respectively. A cup of the value of 15,000 francs has also been presented by Mr. Esders. It will be awarded at the finish of the third race (1936) to the contestant having made the best speed during any of these three contests.

These races will consist of speed competitions each year over a course Deauville to Cannes, a distance of 829 km. (515 miles) and return, making a course of 1,658 km. (1,030 miles) in all to be flown. They will be open to international entries and be governed by the code of rules established by the F.A.I. and the Contest Committee of the Aero Club of France. The regulations are similar to those under which the Deutsch Cup Contest and the Twelve Hours of Anger Competition are flown.

A brief summary of the regulations is as follows: The races will be open to landplanes, single or multi-seater machines, equipped with an engine or engines having a total maximum cylinder displacement limited to 8 litres (488.2 cu. in.). The 1934 race will be flown during July 21 and 22. The planes will take off from the Deauville Airport at one o'clock in the afternoon of the 21st, and be required to arrive at Cannes (515 miles) within a limit of 5 hours. The return flight will be started at the corresponding hour of the following day from the Cannes Airport, and contestants will be obliged to reach Deauville under the same 5-hr. limit. During 1935 and 1936 the races will be flown between July 1 and August 30, the exact dates to be published eight months in advance.

The planes entered must have a certificate of navigability issued by the CINA (Commission Internationale de Navigation Aérienne). Machines of countries not belong-

ing to the CINA must have a certificate from a competent authority stating that the planes have satisfied all the conditions required by the CINA certificate.

Single-seater planes must have a luggage compartment of the minimum volume of 70 cubic decimetres (4,271.7 cu. in.), the door of which shall have a surface of 10 square decimetres (155 sq. in.). The smallest dimension of this opening should not be less than 25 centimetres (10 in.). The form of this compartment should be such that all parts of the bottom can be reached by one's arm, and the door open outwards toward the exterior of the plane. The pilot should be able to open it from his seat.

Single-seater machines must carry a load of 30 kg. (66 lb.) solely for ballast in this compartment during the races. Multi-seater machines must transport at least one adult passenger.

The planes will be sent away from a stationary start, the engines turning if desired. The order of taking off will be determined by lot. Repairs, changes of crews and landings during the races are permitted.

The contestant making the best average time over the course Deauville-Cannes-Deauville will be adjudged the winner, and will receive a cash prize of 100,000 francs. The machine finishing second will receive 30,000 francs.

Ten prizes of 5,000 francs each will also be distributed as follows:—Five of these for the best speeds made in the stretch Deauville-Cannes (515 miles). The other five of these prizes will be awarded for the highest speeds made in the stretch Cannes-Deauville. The winner and the plane finishing second in the race will not be eligible for these additional prizes. The multi-seater machine making the best time over the course will receive a special prize of 20,000 francs.

Entries at a single fee of 1,000 francs will be received by the Aero Club of France up to 6 o'clock, May 15 next. One half of this will be refunded to machines starting in the race. Entries at a double fee close at 6 o'clock on June 30 next.

R. C. W.

THE ROYAL AIR FORCE

London Gazette, November 7, 1933
General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—S. E. MacKenzie (April 10); M. C. Moore (Oct. 4); W. L. Stedman (Oct. 11)

Flt.-Lt. S. N. Webster, A.F.C., is seconded for service with the Egyptian Government (Oct. 1); Lt. H. L. Hayes, R.N., Flying Officer, R.A.F., ceases to be attached to R.A.F. on return to Naval duty. The follg. Flying Officers are transferred to Reserve (Nov. 2):—Class A: A. H. Abbott, A. G. M. Cary, R. I. Johnson, G. F. P. O'Farrell, C. E. W. N. C. Pelly, C. Sarsfield-Sampson. Class C: R. M. Messiter.

Flt.-Lt. C. W. McK. Thompson is transferred to Reserve, Class A (Nov. 6); P/O. J. P. Massey resigns his permanent commn. (Oct. 17); F/O. D. G. W. Somerville resigns his short service commn. (Oct. 25); Lt.-Com. G. R. M. Robertson, R.N., Flt.-Lt., R.A.F., relinquishes his temp. commn. on return to Naval duty (Oct. 19); Capt. W. S. North, R.M., Flying Officer, R.A.F., relinquishes his temp. commn. on return to duty with Royal Marines (Oct. 24).

Medical Branch

The follg. Flying Officers are promoted to rank of Flight Lt. (Oct. 31):—E. Donovan, M.B., Ch.B.; J. F. Sandow, M.R.C.S., L.R.C.P.

ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

C. H. G. Bremridge is granted a commn. as Flying Officer in Class A (Nov. 7); F/O. J. D. Parkinson is transferred from Class AA (i) to Class C (Aug. 28);

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:

General Duties Branch

Wing Commander A. L. Gregory, M.B.E., M.C., to Elect. & Wireless School, Cranwell, 1.11.33, for Signals duties, vice Sq. Ldr. J. R. Cassidy.

Squadron Leader V. R. Scriven, A.F.C., to H.Q., Fighting Area, Uxbridge, 1.11.33, for Equipment (Engineer) Staff duties, vice Sq. Ldr. R. E. G. Fulljames, M.C.

Flight Lieutenants: J. F. A. Day, A.F.C., to No. 9 (B) Sqdn., Boscombe Down, 1.11.33. C. E. Horrex, A.F.C., to No. 22 (B) Sqdn., Martlesham Heath, 1.11.33. J. H. McC. Reynolds, to No. 32 (F) Sqdn., Biggin Hill, 28.10.33. F. C. Rowland, to No. 26 (A.C.) Sqdn., Catterick, 1.11.33. G. C. Shepherd, to Experimental Section, Royal Aircraft Estab., S. Farnborough, 1.11.33. W. Wynter-Morgan, M.C., to H.Q., Central Area, 31.10.33. D. S. Brookes, to



Examination of Applicants for Ground Engineers' Licences or Extension to the Scope of Existing Licences

(1) Examination Boards will sit for the purpose of examining applicants for ground engineers' licences at the following places and times:—

- (a) London, weekly, on each Tuesday in January, February and March, 1934.
- (b) Croydon, on the second Friday in January, February and March, 1934.
- (c) Manchester, on the first Friday in February, 1934.
- (d) Bristol, on the first Friday in January, 1934.
- (e) Glasgow, on the third Thursday in January, 1934.

(2) Applications for licences should be made on C.A. Form 2B, which is obtainable on request, and should be addressed to The Secretary, Air Ministry (C.A.2), Adastral House, Kingsway, London, W.C.2. Applications for extensions to existing licences will also be dealt with at these boards,



Royal Aero Club Hospitality Committee

MR. W. LINDSAY EVERARD, the Vice-Chairman of the Royal Aero Club, entertained the following Members of the Hospitality Committee to luncheon on November 8:—Mrs. A. S. Butler, Mrs. Nigel Norman, Air Vice-Marshal A. E. Borton, Mr. G. H. Wilson-Fox, Mr. H. Gordon Selfridge, Junr., Capt. the Earl Amherst, Maj. J. D. Shaw, Lord Willoughby de Broke, Lt. Col. F. C. Shelmerdine and Mr. H. E. Perrin. The object of this Committee is to provide hospitality to all private owner Air Tourists visiting this country, and to organise from time to time Air Tours, both to and from this country.

London-Melbourne Air Race

THE representatives of the MacRobertson Air Race Committee and the Royal Aero Club recently met in London to discuss certain conditions governing the race when the following decisions were reached:—

Certificates of Airworthiness.—All aircraft competing in the race will be required to possess a certificate from the parent State that they attained a standard equivalent to the I.C.A.N. standard for a certificate of airworthiness in the normal category.

Cancellation of the Race.—In order to clear up any misunderstanding regarding the right of the Melbourne Centenary Council to cancel the race at any time, an agreement has been reached whereby the right of cancellation will only be exercised in the event of war or national emergency. All inquiries should be addressed to the Secretary, Royal Aero Club, 119, Piccadilly, W.1.

Egyptian Minister inspects new aircraft

ON November 14 the Egyptian Minister in London, H. E. Hafez Afifi Pasha, inspected at Lympne the Avro 626 machines which have recently been built for the Egyptian Army Air Force. The machines, which are fitted with

F/O. C. M. D. Chambers is transferred from Class C to Class A (Oct. 23). F/O. E. H. Newman relinquishes his commn. on completion of service (July 15).

AUXILIARY AIR FORCE

General Duties Branch

No. 601 (COUNTY OF LONDON) (BOMBER) SQUADRON.—The follg. relinquish their commns. on completion of service:—Ft.-Lt. J. J. Parkes (July 13); F/O. R. Bellville (Aug. 31, 1932).

No. 602 (CITY OF GLASGOW) (BOMBER) SQUADRON.—G. C. Pinkerton is granted a commn. as Pilot Officer (Oct. 18). The follg. Pilot Officers are promoted to rank of Flying Officer:—E. A. Howell (Oct. 9); C. M. B. Renshaw (Oct. 21).

No. 604 (COUNTY OF MIDDLESEX) (BOMBER) SQUADRON.—F/O. I. G. Statham is promoted to the rank of Flight Lt. (Oct. 7).

AUXILIARY AIR FORCE RESERVE OF OFFICERS

General Duties Branch

J. J. Parkes is granted a commn. as Flight-Lt. in Class A (July 13). The follg. are granted commns. as Flying Officers in Class A:—R. Bellville (Sept. 25); A. G. Haward (Nov. 8).

No. 3 (F) Sqdn., Upavon, 4.11.33. N. H. D'Aeth, to R.A.F. Base, Calshot, 6.11.33. G. H. Russell, D.F.C., to No. 16 (A.C.) Sqdn., Old Sarum, 28.10.33. A. E. Paish, to No. 99 (B) Sqdn., Upper Heyford, 30.10.33.

Flying Officers: F. B. Bristow, to No. 15 (B) Sqdn., Martlesham Heath, 6.11.33. H. W. Marlow, to No. 24 (Commn.) Sqdn., Hendon, 4.11.33. L. H. Anderson, to Station H.Q., Ramleh, 16.10.33.

Pilot Officer G. H. Gatheral, to No. 18 (B) Sqdn., 1.11.33, on appointment to a Short Service Commn. as Pilot Officer on probation.

Medical Branch

Flight Lieutenants: G. W. Paton, to Central Med. Estab., 2.11.33. H. C. S. Pimblett, to R.A.F. Hospital, Cranwell, 1.11.33. P. D. Barling, to Air Armament School, Eastchurch, 3.11.33.



and such applications should be made on C.A. Form 2D to the above address. When forwarding the application, the applicant should indicate the provincial centre which he wishes to attend for examination, if he is unable to take the examination in London.

(3) Application for examination at the centres named at (1) (c), (d) and (e) above can only be accepted provided that the application, together with the appropriate fees, is received 28 days before the dates specified, and provided also that the total number of applications received is within the capacity of the board. Applicants whose applications are not accepted owing to these provisions will be given the opportunity of early examination in London, or, alternatively, of being placed on a waiting list for the next board to be held in the place in question.

(4) **Cancellation.**—Notice to Aircraft Owners and Ground Engineers No. 36 of the year 1933 is hereby cancelled.



Armstrong-Siddeley "Cheetah" engines, are suitable for general purpose duties, and may be used for co-operation in anti-contraband measures, air survey and photographic work. The machines will be leaving for Egypt shortly under the command of Sqd. Ldr. V. H. Tait, whose Egyptian rank is Kaimakam Tait Bey, and who has been seconded for duty with the Egyptian Government. Second in command will be Bimbashi S. N. Webster, whose Egyptian rank obscures, even if it does not conceal, the identity of the winner of the Schneider Trophy Contest at Venice in 1927.

Oases Meeting

BRITISH competitors in the Oases Meeting will be required to hold the F.A.I. Sporting Licence, and those who have not already done so should apply to the Royal Aero Club for such licence, sending one passport photograph.

Airwork changes

CAPT. E. D. AYRE has relinquished his position in charge of the workshops at Hanworth, and from November 20 will be manager of the Manchester (Barton) Municipal Airport. Mr. R. Muntz, who has held the position of manager at Manchester since Airwork, Ltd., took over the management of that airport, is being lent to Misr-Airwork for duty at Cairo.

Hawkers for Portugal

THE Portuguese Government has recently placed an order for a small number of Hawker "Fury" single-seater fighters (Rolls-Royce "Kestrel" engines). These machines will, of course, be built in this country, but we understand that it is quite probable that the Portuguese Government may decide to build further machines in Portugal under licence.

BRIEFLY

LEAVING no doubt as to what the machine or its name is, the new trade mark of the Miles "Hawk," shown here, is appropriately a bird of this name. This mark is now to be found on the fuselage of each machine, to which it is applied as a transfer. It is in the natural colours of a Sparrow Hawk, and certainly adds to the already attractive lines of this aeroplane.



THE Florine helicopter shown on page 1158 can be seen in flight at the theatres showing the Movietone News programme.

It is with extreme regret that we have to record the death on the 5th inst. of Mr. A. J. Crump, who had been acting in the capacity of sales manager to H. M. Hobson, Ltd., for a period of 21 years. He joined the firm in May, 1912, and worked with untiring energy and devotion to his duties throughout the whole period of his service with them. He was well known to all the principal firms in the industry, and we feel sure that his many friends throughout the country will regret to hear of his passing.

A LECTURE entitled "Full Scale and Model Aircraft Design Differences" will be given by Mr. M. R. Knight in the Lecture Hall of the Junior Institution of Engineers, 39, Victoria Street, S.W.1, on Thursday, November 30, at 7.30 p.m. prompt. This lecture has been arranged by the Model Aircraft Club, and is open without charge to anyone interested. It is hoped that many will take advantage of this opportunity of learning something of a very important aspect of model aeronautics.

THE Annual Dinner and Dance of the College of Aeronautical Engineering, Chelsea, will be held at Grosvenor House on Wednesday, November 22. Old students requiring tickets are requested to communicate with the Secretary as early as possible.

A BREGUET gyroplane was having its engine run the other day, the revolving surfaces began to move, and the lift caused the machine partly to rise. It tilted on to one wheel, however, the revolving surfaces struck the ground and were damaged.

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1932 being given in FLIGHT, January 19, 1933.

	Imports		Exports		Re-exports	
	1932.	1933.	1932.	1933.	1932.	1933.
	£	£	£	£	£	£
Jan. . .	2,456	2,073	122,942	82,963	863	827
Feb. . .	2,503	9,866	181,482	79,357	90	3,050
Mar. . .	1,946	3,760	167,195	126,008	200	821
April. .	622	2,236	142,145	121,030	1,128	94
May . .	1,747	232	138,356	149,214	5	—
June . .	398	1,021	126,330	137,186	125	2,037
July . .	1,070	4,806	142,702	75,634	120	2,520
Aug. . .	511	284	111,073	96,368	3	2,000
Sept. . .	2,161	2,091	115,464	140,323	—	710
Oct. . .	1,511	1,126	192,361	239,814	147	1,513
	14,925	27,520	1,440,050	1,241,021	2,681	13,572

PUBLICATIONS RECEIVED

Technical Notes of the U.S. National Advisory Committee for Aeronautics: No. 464. *A Complete Tank Test of a Model of a Flying-Boat Hull*—N.A.C.A. Model No. 11. By J. M. Shoemaker and J. B. Parkinson. July, 1933. No. 465. *Some Characteristics of Sprays Obtained from Pintle-Type Injection Nozzles*. By E. T. Marsh and C. D. Waldron. July, 1933. No. 466. *Engine Performance with a Hydrogenated Safety Fuel*. By O. W. Schey and A. W. Young. July, 1933. No. 467. *Simplified Aerodynamic Analysis of the Cyclogiro Rotating-Wing System*. August, 1933. No. 468. *A Study of Factors Affecting the Steady Spin of an Airplane*. By N. F. Scudder. August, 1933. No. 469. *A Summary of Design Formula for Beams Having Thin Webs in Diagonal Tension*. By P. Kuhn. August, 1933. No. 470. *A Complete Tank Test of a Model of a Flying-Boat Hull*—N.A.C.A. Model No. 11-A. By J. B. Parkinson. September, 1933. No. 471. *A Complete Tank Test of a Model of a Flying-Boat Hull*—N.A.C.A. Model 16. By J. M. Shoemaker. September, 1933. No. 472. *The Effect of Partial-Span Split Flaps on the Aerodynamic Characteristics of a Clark Y Wing*. By C. J. Weuinger. September, 1933. The U.S. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Air Transport Manual. By the Staff of "The Commercial Motor." London: Temple Press, Ltd. Price 3s. 6d. net.

1933 *Achievements*. C. C. Wakefield and Co., Ltd. Wakefield House, Cheapside, London, E.C.2.

The Truth About Nobble. By Elisabeth Dithmer. Translated from the Danish by E. Dithmer and F. Fleetwood. London: Williams and Norgate, Ltd. Price 3s. 6d. net.

NEW COMPANIES REGISTERED

AERO SPARE PARTS, LTD.—Capital £300, in £1 shares. Motor and general engineers, and proprietors of garages and service stations, suppliers of petrol, etc. Director: Norman S. Coop, Fern Bank, Stanningley Road, Bramley, Leeds, motor engineer. Solicitors: Butler and Ackroyd, 49, Bank Street, Bradford.

NITREX, LTD.—Capital, £1,850 in £1 shares (1,750 5 per cent. cumulative preference and 100 ordinary). Acquiring the patent rights relating to improvements for use of crude oil in internal-combustion engines registered in the names of C. W. Murray and J. Maina or one of them, and to carry on the business of manufacturers and vendors of internal-combustion engines, motor vehicles, aeroplanes, Diesel and steam engines, etc. Directors: Charles W. Murray, Joseph Maina, and the Rt. Hon. the Earl of Halsbury, K.C. Solicitors: Walfords, 27, Bolton Street, Piccadilly, W.1.

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APPLIED FOR IN 1931

Published November 16, 1933

35,153. A. F. NASH. Aeroplanes and other aircraft. (400,213.)

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Published November 16, 1933

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30,517. R. P. PESCARA. Motor compressors with free pistons. (400,421.)
30,599. DORNIER METALLBAUTEN GES. and C. DORNIER. Flying-boats. (400,423.)

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2,519. S. A. F. YACCO. Cowlings for air-cooled engines. (400,470.)
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Birth.

GREEN.—On November 9, 1933, at Felixstowe, to DOROTHY (née Hennessy), wife of FLIGHT-LIEUT. G. D. GREEN, R.A.F.—a son.

Death.

LIDDERDALE.—On November 4, 1933, at the the Lindens Cottage, Farnham, Surrey, Wing COMMANDER JOHN HENRY (Jock) LIDDERDALE, O.B.E., R.A.F., aged 43, son of the late Dr. James and Mrs. Lidderdale, formerly of Prestbury, Gloucestershire.

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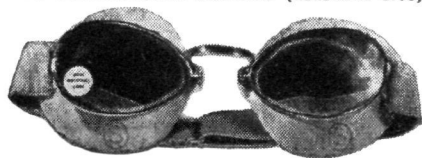
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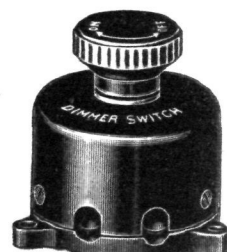
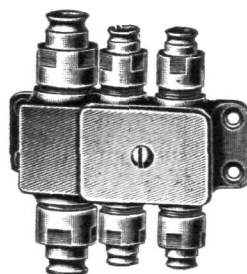
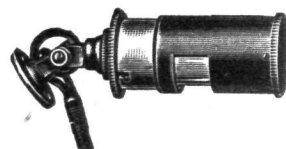
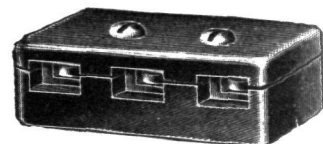
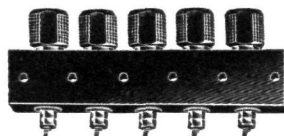
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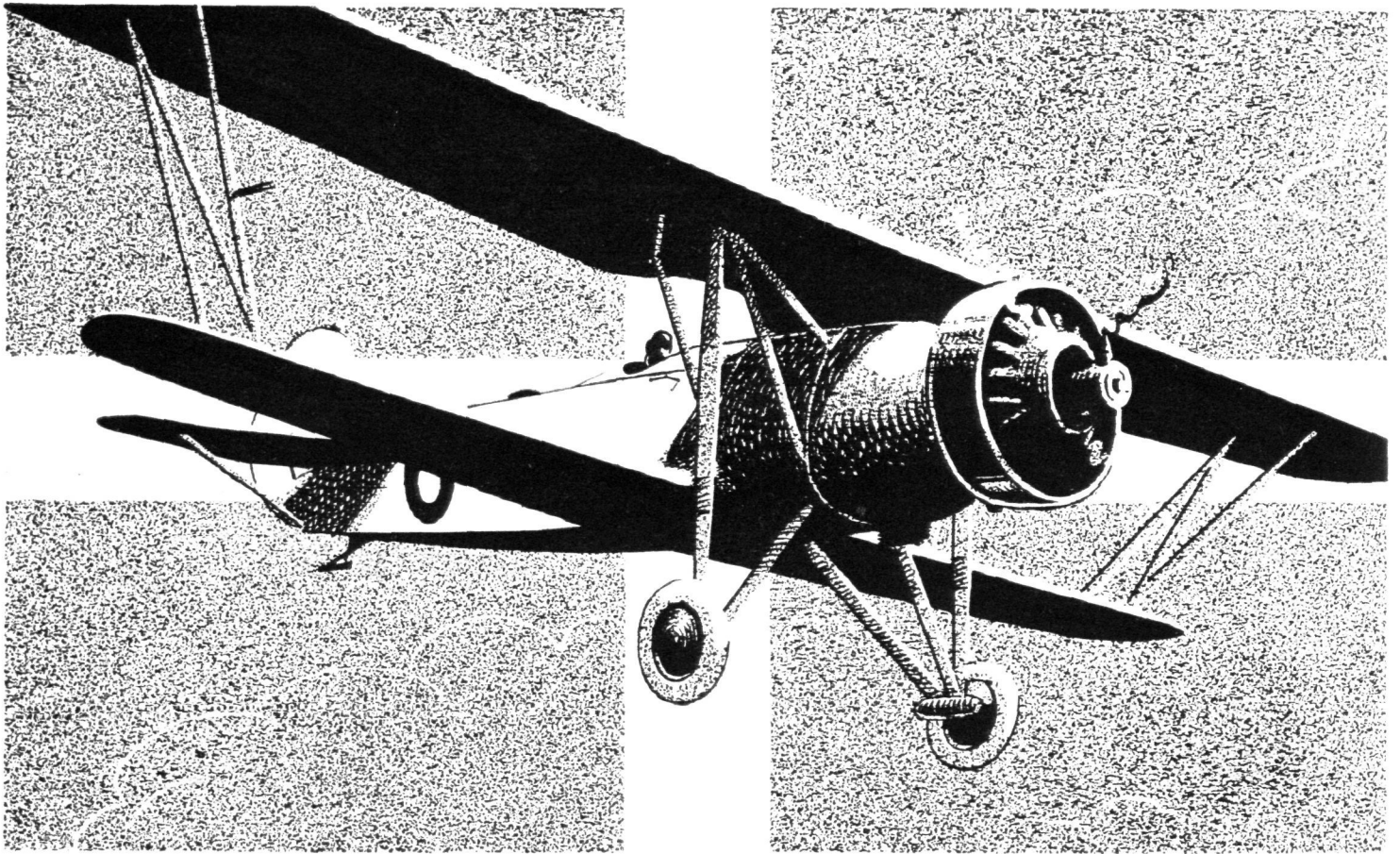
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